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ABSTRACT

Designed as a resource book which can be used to supplement the regular curriculum by integrating one or more career education activities into regularly taught courses, this volume for grades 6 through 9 is one of a series of three manuals, one each for the elementary (grades 1-6), junior high (grades 6-9), and senior high (grades 9-12) levels. It is divided into three sections, Introduction, Activities and Instructions, and Resources. The Introduction describes how to use the manual and briefly discusses the goals of career education. Activities and Instruction, covering the majority of the document, presents career education activities for each of eight subject areas: Social studies (10 activities), art (2 activities), health (4 activities), foreign languages (2 activities), English (10 activities), mathematics (10 activities), science (10 activities), and physical education (2 activities). Each subject area includes an activities summary, introduction, sample week's lesson plans, cross reference, and a student activities section, which is prefaced by teaching prerequisities and objectives. (The cross reference identifies by number activities which treat particular occupational issues and jobs and activities which reinforce specific subject area topics and skills.) The Resources section, under separate headings, discusses the following three aspects of career education which should be considered in order to implement the activities most productively: Teacher objectivity in career education, liaison with the community, and effective teaching methods for career education. (TA)

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Career Education Activities for Subject Area Teachers

Grades 6 through 9

May, 1975

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CONTENTS

INTRODUCTION 1

What the Manual Is 3
How to Use the Manual 3
What the Goals of Career Education Are 4
Why Teach Career Education 5
What the Activities Are Like 6

ACTIVITIES AND INSTRUCTIONS

Section One: Social Studies

1. Activities Summary 15
2. Introduction 16
3. Sample Week's Lesson Plans 18
4. Cross Reference 19
5. ACTIVITIES 21

Section Two: English 71

1. Activities Summary 73
2. Introduction 74
3. Sample Week's Lesson Plans 76
4. Cross Reference 77
5. ACTIVITIES 79

Section Three: Mathematics 121

1. Activities Summary 123
2. Introduction 124
3. Sample Week's Lesson Plans 125
4. Cross Reference 128
5. ACTIVITIES 129

Section Four: Science 185

1. Activities Summary 187
2. Introduction 188
3. Sample Week's Lesson Plans 189
4. Cross Reference 191
5. ACTIVITIES 193

Section Five: Other Subject Areas 245

1. Activities Summary 247
2. Introduction 248
3. ACTIVITIES 249
   a. Art 249
   b. Foreign Languages 257
   c. Health Education 265
   d. Physical Education 283

RESOURCES 289

Teacher Objectivity in Career Education 292

Liaisor with the Community 296

Identifying Places and People to Contact 296
Enlisting the Interest of Target Businesses and Agencies 297
Logistics of Field Trips and Interviews 298
Legal Issues Involved in Field Trips 299
Three Key Resources 299

Effective Career Education Teaching Methods 302

Role Plays 302
Games 305
Field Trips 307
Interviews 310
Polls 312
Small Group Discussions 315
Class Discussions 317
Peer Teaching 318
Independent Study 319
Research and Reports 320
Volunteer Work 321
Writing 322

INDEX OF ACTIVITIES 323

INTRODUCTION

WHAT THE MANUAL IS

This manual contains activities on career education for use by instructors who teach:

- social studies (13 activities)
- English (10 activities)
- mathematics (10 activities)
- science (10 activities)
- art (2 activities)
- health (4 activities)
- foreign languages (2 activities)
- physical education (2 activities)

The activities in each subject area section are listed by a title and a capsule description at the beginning of each section and in an index at the end of the volume. The activities within each subject area section are organized very generally from less complex to more complex.

The manual is a unique volume because it provides exclusively for subject area teachers a variety of career education activities which:

- are representative of some of the best activities and ideas for activities that have already been developed, supplemented by activities developed solely for this volume;
- involve students in action-oriented exercises, such as field trips and simulations;
- treat affective and attitudinal issues involved in career choices, such as role modeling, as well as cognitive factors;
- provide detailed teaching instructions which, at the same time, promote maximum flexibility and adaptability.

The manual is designed as a resource book which you can use to supplement your regular curriculum by integrating one or more career education activities into the courses you teach. The volume is part of a series of three manuals, one each for the elementary, junior high, and senior high levels. Because there is an overlap in grade levels between manuals (the elementary manual is for grades 1-6, the junior high for grades 6-9, and the senior high for grades 9-12), some of the same activities appear in more than one manual.

HOW TO USE THE MANUAL

Read the Introduction. This section presents the goals of career education and discusses why it is important to integrate career education activities into traditional subject areas.

Read the introductory material that precedes the manual section appropriate to your subject area. There is a section for each major subject area – social sciences, English, mathematics, and science and a final section called "Other Subject Areas" which treats art, health education, foreign languages, and physical education. This material discusses how you can integrate the activities into your particular subject area in ways that achieve both career education goals and subject area goals.

Read the activities for your subject area and select those activities for implementation which:

- will most interest and benefit your students;
- are most appropriate to your students' learning styles and abilities; and
- will help you best to achieve your subject area objectives.

Read the three resources at the end of the manual for suggestions on:

- how to avoid sex, ethnic, class, political, and religious stereotyping of careers and jobs;
- how to identify and contact appropriate people, businesses, and groups in your community; and
- how to implement those instructional strategies, such as role plays, interviews and volunteer work, which are highly effective for teaching career education.

These resources can be of vital assistance to you in implementing the activities because they provide teaching suggestions specifically targeted to the needs of career education.

Feel free to use parts of activities or simply ideas from activities. You can also implement the activities with an entire class, with part of a class, or with an individual student as an independent study exercise. If you adapt an activity or find part of an activity particularly useful (or inappropriate), you and your students can help future users of the activity by recording your experience at the end of each activity in the space provided for Comments from Teachers and Students.

WHAT THE GOALS OF CAREER EDUCATION ARE

In a study* funded by the National Institute of Education, five general career education goal statements were identified after a review of the many career education definitions that exist. An attempt was made to narrow the range of goals to those which are feasible for schools to meet. The following definition is not meant to be final, but is offered as a concrete definition for you to agree with or react to. The five general goals are summarized below.

1. Career education should help match peoples' characteristics and desires with career opportunities available. This is particularly important because future jobs will require more specialized skilled workers than in the past and particularly difficult since the types of jobs available may change dramatically.
2. Career education should help students develop awareness of adult roles and capabilities. We need to provide more ways for youth to become involved with employed adults to help youngsters make the transition as smoothly as possible from unemployed dependents to self-employed adults.
3. Through career education, schools should both provide many diverse routes to traditionally rewarded masteries in school and recognize and develop other important interpersonal skills useful for career entry and progression.
4. Career education should help students to understand and to influence their economic-political-social system. Career education, by promoting awareness of the world of work as it actually functions, can help students learn how to use the social system constructively for their own benefit.
5. Career education should provide students with opportunities for both specialized occupational training and basic academic skills.

The activities in this manual are designed to help students to achieve the first four of the above five career education goals. More specifically, the activities are intended to assist students to develop:

*Career Education: *The State of the Idea and its Prospects for the Future*, by Elliot Eisner, Joseph Schwab, and Decker Walker

- self-awareness of their own interests and goals;
- awareness of what long-term career opportunities are available;
- awareness of what specific occupations involve; and
- career-relevant attitudes and skills, such as a positive self-image and the ability to make responsible decisions.

WHY TEACH CAREER EDUCATION

As a subject area teacher, you should consider career education as an integral and appropriate component of your course which will **increase your students' ability and motivation to learn the content and skills of your subject area.**

There are three ways in which integrating career education activities into your course can help you achieve your subject area objectives.

- In the process of learning about career opportunities and roles, your students will learn a great deal about your subject area **topics** related to the career or occupation that they are studying. For example, if a student engages in volunteer work during a political campaign he or she will learn a great deal about how our political system functions, an important social studies objective.
- Many of the **skills** in your subject area will be developed or reinforced through the use of career education activities. For example, if an English class designs, administers, and analyzes a poll of librarians or journalists, students will develop their writing, speaking, listening and interpretation skills.
- By including career education activities in your course, you will increase your students' **motivation** to study and learn about your subject area topics and to develop related skills. By studying careers in exciting, action-oriented ways, students will be stimulated to delve further into fields related to the occupations they are investigating. For example, mathematics or science students who study engineering as a career by interviewing engineers may want to learn more about the mathematics and scientific skills and knowledge required to become an engineer. In this manner, career topics have the attractiveness of "**relevance**" for studying and learning subject area content matter and skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected, as well as the involved student who wants to know what your course has to do with the world of an adult: "How can studying the nature of the atom in science do me any good or get me a job?" is the unspoken query of many students today.

How can career education be integrated into your subject area so that career education and the subject both benefit?

> Let's take as an example an English career education activity in which students interview an employed person of their choice. After the interview, the students write a brief character sketch or short story describing how this individual's personality relates to his or her performance on the job. Conducting the interview and writing the story will help students to perceive both the relationship between job satisfaction and personality and the characteristics of the job being examined. In addition to the above **career education** goals, an English teacher can also use this activity to help achieve a number of **English** objectives. The activity can be introduced when students are studying short stories of character, such as O. Henry's

"The Cop and the Anthem," D.H. Lawrence's "The Prussian Officer," or Daniel Keyes' "Flowers for Algernon." In this context, the activity can teach a great deal about characterization, drawing conclusions, the short story as a form of literature, clarity of style, and occupational terminology – **all of which are English objectives.** By combining career education and English objectives, students will learn more about both careers and the short story than if each were studied in isolation, because each component of the activity deepens understanding of and interest in the other.

WHAT THE ACTIVITIES ARE LIKE

Four guidelines have determined the selection, development and revision of the activities.

Active Instructional Strategies

One highly effective method for learning about career education is for students to **do** and **observe** what people in various occupations themselves **do**. In addition, frequent contact with employed persons in the community provides students with occupational role models which they might otherwise lack. The manuals have therefore included many activities which involve students in action-oriented exercises, such as role plays, games, volunteer work, peer teaching, experiments, computations, communication (reading, writing, conversing, listening), field trips, interviews and polls.

Affective Educational Approaches

Most career education curriculum materials stress the need for student awareness and exploration of alternative occupations and the selection of a career on a rational basis from among these options. However, many people do not choose careers solely or even primarily on a rational basis of awareness and experience. For these individuals, a purely cognitive educational approach is not sufficient to increase career options because they may select a career based on **nonrational** reasons, such as fear of responsibility, passion for glamour, emulation of or rebellion against a parent, an inflated or underestimated view of their own capabilities, or the influence of a single role model. Career education must help these students to identify and deal with their feelings about careers and jobs by providing activities that are specifically designed to encourage pupils to express and explore their **feelings**. Therefore, the inclusion of affective educational approaches has been an important focus of the manual.

Detailed Teaching Instructions with Flexibility

A third characteristic of the activities is that they provide the teacher with as much information as possible on how to implement them, without destroying their flexibility. It is still up to you to adapt them to your particular students, syllabus, school, and community.

Best Available Materials

The activities offered in the manual represent a unique combination of the most appropriate activities that other curriculum developers have produced along with activities developed by project staff especially for this volume. Initially, project staff conducted an extensive search for appropriate activities, reviewing 278 documents from 60 sources across the nation, including Educational Resources Information Center (ERIC), federal, state and local government agencies, universities, elementary and secondary school systems, individual teachers, and informal sources such as newsletters and catalogs.* Those activities culled from outside sources were revised by project staff to meet the

*Private publishers and other producers of copyrighted materials were not canvassed. In addition, many fine curriculum products were not used because the materials could not be adapted to the specific needs the manual is designed to meet. Finally, the activities search was extensive, but not definitive, so that some appropriate activities were no doubt overlooked.

specific goals the manual is designed to achieve. These outside sources have been credited at the bottom of the first page of each appropriate activity.

The manual has been reviewed in part or entirely by many people. The activities were thoroughly reviewed for accuracy and useability by thirty-four subject area teachers. Several individuals also supplied the authors with useful resource documents. We are grateful for these comments and materials. These people, are, however, in no way responsible for errors, omissions, or biases in the manual. Thanks are given especially to Dr. Ferman Moody and Dr. Marla Peterson for spending several days carefully and productively critiquing earlier drafts of the manual. In addition, Peter Wolff, the Abt Associates quality reviewer for the project, likewise read the entire volume and provided helpful comments. Linda Wurm creatively developed the artistic work – illustrations, charts, and cover. Contributions were also made by Peter Fellenz, Myrna Finn, Julius Finn and Beatrice Paipert. Early and all but illegible drafts of the activities were typed with patience by Pat Griffin, Elizabeth Harmer, Joanne Klotz, Claudette Piper, Ellie Wiessman, and Mary Stroud. Deborah Greene and Katherine Scheller spent many hours typesetting the manual, while Roy Nelson handled the layout and design. Finally, we are happy to acknowledge the important contribution the NIE Project Monitor, Tory Cowles, made to the manual in terms of her helpful suggestions, ready assistance, and constant availability.

* * *

There is a brief questionnaire on the following page which we would appreciate your filling out and mailing after you have used the activities in your classes. The form will enable us to assess the need for revisions in the activities and the need for publishing additional volumes of career education activities for subject area teachers. Thank you.

YOUR OPINION OF THE ACTIVITIES MANUAL

This career education manual is unusual because it is designed for use by subject area teachers within their traditional discipline areas. As a user of this manual, you are something of a "pioneer" who could help us decide how to improve it and what kinds of new activities and manuals to develop. Please answer and return the following questionnaire.

Thank you.

---

1. To what extent did you find the activities useful for:

	Highly Useful	Of Some Use	Not Useful
- helping students learn about career opportunities or skills needed to enter one or more occupations	☐	☐	☐
- teaching about your subject area (English, math, social studies, science, other)	☐	☐	☐
- helping students develop self-awareness and interpersonal skills that relate to career choice	☐	☐	☐
- providing enjoyable activities for your students	☐	☐	☐
- providing you with detailed instructions so you could implement the activities without much additional work	☐	☐	☐

2. How much preparation time did you have to engage in to teach the activities? (check one)

just the right amount of time ☐ too much time ☐ would have been willing to devote more time to preparation ☐

3. Would you use a similar activities manual that contained additional activities? (check one)

Yes ☐ No ☐

4. In what subject area(s) did you use the activities? (check all that apply)

Social Studies ☐ Math ☐ Science ☐ English ☐

Other ☐ (specify) _____

5. What is (are) the grade level(s) in which you used the manual? (circle all that apply)

K 1 2 3 4 5 6 7 8 9 10 11 12

6. Are your students: (check all that apply)

- members of minority groups
  - from rural areas ☐
  - from urban areas ☐
  - from suburban areas ☐
- behind grade level ☐
- slow learners ☐
- poor ☐
- middle-class ☐
- wealthy ☐
- college-bound students ☐

7. Please add any other comments you may have in terms of how this manual should be revised or what new manuals we should develop.

_____

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Career Education

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ACTIVITIES AND INSTRUCTIONS

Section One: SOCIAL STUDIES

1. ACTIVITIES SUMMARY

This section of the manual contains the following ten activities, sequenced very generally from easiest to most difficult.

1. **JOB BANK:** The class compiles a "job bank" based on interviews with parents.
2. **THE LOOK OF THE JOB:** Students construct a collage and examine the interrelations of various jobs within an occupational area.
3. **COOKING, SEWING, AND CLEANING:** Students observe and interview their family homemaker.
4. **TO SERVE YOU BETTER:** Students survey parents and neighbors to discover need and use for people in service trades.
5. **THE BICYCLE SHOP:** Students use role plays to experience small business occupations.
6. **JOBS IN CITY HALL:** Students take field trips and conduct interviews to investigate the career opportunities and job requirements in local governmental agencies.
7. **THREE BURGERS, NO CATSUP!:** Students investigate the fast food franchise industry through research, interviewing and observations, and evaluate it in light of current course topics and as a career.
8. **THE SIX O'CLOCK NEWS:** Students study and then produce a news broadcast.
9. **MAKING SENSE OF DOLLARS AND CENTS:** Students interview and observe clerical and professional staff employed in the economic institutions in their community to explore office-related and finance occupations.
10. **COPS AND ROBBERS:** Students interview and observe people who operate the criminal justice system.

2. INTRODUCTION

As a social studies teacher, you should consider career education as an integral and appropriate component of your teaching which will **increase your students' ability and motivation to learn social studies content and skills.** Moreover, it is easy for you to incorporate career education into your subject area because of the flexibility inherent in the variety of courses which fall under the general rubric of social studies, including American history, world history, economics, citizenship, government, problems of democracy, and frequently courses like psychology, anthropology, and other discrete social issues.

How will the integration of career education activities into your social studies courses help you achieve social studies objectives? There are at least three answers to this question.

1. While engaging in the career education activities provided in this manual, your students will learn a great deal about social studies **topics** related to the career or occupation they are studying. For example, if a student engages in volunteer work during a political campaign to learn what it is like to be a politician, the student is also going to learn a great deal about how our political system functions. In short, learning about careers in social science fields automatically involves learning about social science **subject matter.**
2. Many of the **skills** in the social studies curricula will be developed or reinforced through the use of career education activities, including such skills as decision-making, interpretation, and drawing analogies. For example, if your class designs, administers, and analyzes a poll of members of a particular occupation, the students will be developing their interpretation and analytical thinking skills.
3. By including career education activities in your courses, you will increase your students' **motivation** to study and learn about social studies topics and develop related skills. By studying careers related to social studies in exciting, action-oriented ways, students will be stimulated to delve further into the field related to the occupations they are investigating. For example, students who study politics as a career by engaging in volunteer work will probably want to learn more about how the political process in America operates and how political institutions in this country function. In this manner, career topics have the attractiveness of "**relevance**" for studying and learning social studies content matter and skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected, as well as the involved student who wants to know what social studies has to do with the world of an adult: "Can studying the American Revolution get me a job?" is the unspoken query of many students today.

How can integration of career education with social studies operate in practice? Let us look briefly at a hypothetical Sample Week's Lesson Plan to see how social studies teachers can integrate career education activities into their courses.

3. SAMPLE WEEK'S LESSON PLANS

The hypothetical but typical week's lesson plans on the following page are "being used" in a Citizenship or Local Community Studies course that is in its eighth week. The lesson plans presume that you have already addressed in general terms the structure of government on the local, state and national levels.

You have now reached the point of discussing in detail the students' own local governmental structure, in particular, and/or local government in the United States, in general. You have chosen to integrate a career education activity on occupations in local government agencies (Activity #6) into the second and fifth periods during this hypothetical eighth week. You have integrated the activity in such a way that it not only will help your students become familiar with the variety and nature of occupations in local government and thereby achieve **a career education objective**, but it will also help your students learn about the structure of local government, **a citizenship and social studies objective.**

You will note that Activity #6 has actually been somewhat revised for this particular series of lesson plans. This illustrates the flexibility with which you can integrate the activity, and the other career education activities, into your course. The original activity, for example, has students divided into teams, each team researching a different government agency. You may find this approach of more value or easier to implement than the individualized study option illustrated in the following pages' lesson plans.

However you adapt the activities to fit your social studies lesson plans and students' needs, the essential goal should not be lost: to help your students become aware of job possibilities and of compensations, skills, and tasks different occupations require and involve.

SAMPLE WEEK'S LESSON PLANS

(An illustration of one way to integrate a career education activity into your course.)

HOMEWORK ASSIGNMENT	DESCRIPTION OF CLASS ACTIVITY
Students read section of citizenship textbook that treats structure of local government and, in particular, of civil service jobs.	• Class discusses structure of local government and what agencies are responsible for what tasks. • Class identifies and discusses different types of jobs and careers available in these agencies.
Students prepare questions about local government and jobs available in local government agencies they would like answered.	• Class takes field trip to one or more local government agencies, such as city hall, fire department, health department, or welfare office. • During trip students pose appropriate questions to government employees they meet and take notes on answers. (Activity #6)
Students select one or more careers they talked about, read about, or viewed during field trip, and research the nature of the occupation in the library.	• Students spend period continuing their library research, but expanding it to include a study of not only careers but also of the function(s) the related agency or agencies perform for local government.
Students write description of "A Day in the Life of a Fire Fighter (or Welfare Worker, etc.)" that describes what employees do and what the agency does.	• Two or more employees of local governmental agencies come to class to explain and compare what they personally and their agencies in general are responsible for doing in the community.
Students complete their descriptions.	• Students read several of their written job/agency descriptive pieces and compare the agencies and careers these pieces discuss.

4. CROSS REFERENCE

The cross reference below identifies by number activities which treat particular occupational issues and jobs (listed across the top of the page) and activities which have been developed for use in specific social studies courses (listed down the left-hand side of the page). By using the reference, you can locate activities by the specific social studies course which you teach and by specific jobs or occupational issues which you would like your students to learn about.

SOCIAL STUDIES

CROSS REFERENCE

TOPIC OR SKILL / OCCUPATIONAL FOCUS	All Occupations	Auto Engineer Specialist	Auto Mechanic	Banker	Barber	Beautician	Bookkeeper	Career Awareness	Civil Service Jobs	File Clerk	Food Industry Employees	Franchise Operator	Funeral Home Director	Homemaker	Investment Counselor	Judges	Lawyers	Local Government Agency Positions	Newscaster	News Editor	Police	Prision Guard	Probation Officer	Prosecutor	Repair Person	Restaurant Owner	Salesperson	Secretary	Service Trades	Small Business Owner	Stenographer	Stock Broker	Television Repairperson	Teller	Typist	Word Processing Specialist
Citizenship	2	8	4	9	4	4	9	1	6	9			4		9	10	10	6	8	8	10	10	10	10	5	4	5	9	4	5	9	9	4	9	9	8
Family Studies								1						3																						
History		8																	8	8																8
Local Community Studies	2		4	9	4	4	9	1	6	9	7	7	4	3	9	10	10	6			10	10	10	10	5	4	5	9	4	5	9	9	4	9	9	

OCCUPATIONAL FOCUS:

- Career Awareness

SOCIAL STUDIES RELEVANCE:

- Family Studies
- Citizenship
- Local Community Studies

Activity #1

Subject Area:
Social Studies

JOB BANK

***Capsule Activity Description:**

The class compiles a "job bank" based on interviews with parents.

Teaching Prerequisites:

materials needed: tagboard or construction paper
contacts with community: advice from local journalist
approximate teacher preparation time: ½ - 1 hour
approximate class time: 2 - 2½ classes

Social Studies Objectives:

to understand the relation of the employed parent to the family and to society;
to become aware of some of the conflicts between family life and employment.

ACTIVITY

In this activity, each student chooses one parent to interview (if no parent is available, students can interview relatives or guardians) to gather information for a class "job bank" which houses information and photographs on different careers in the community.

*The core ideas for this acuvity came from two activities – one developed by Leah J. Pointer, the other by J.H. McGinn and K. Morris. The original activities are part of *The World of Work. A Curriculum Guide for Grades One through Twelve*, Educational Systems Development Corp. (New Orleans, Louisiana: 1972), and *Career Education: A Handbook for Program Initiation*, Mississippi State Department of Education, Jackson Division of Vocational and Technical Education (Jackson, Mississippi: 1972), respectively. *Career Education: A Handbook for Program Initiation* may be ordered from Research and Curriculum Unit, Mississippi State University, P.O. Drawer DX, State College, Mississippi 39762 for $2.50.

Activity #1

The activity can be easily integrated into a family studies course whenever the family is discussed in terms of who should be the "breadwinner" and what the responsibilities of a "breadwinner" should be. The activity can also be used in family studies and citizenship courses to illustrate conflicts and relationships between family members and the world of work. Finally, the activity can be used in a local community studies course because, through their interviews with parents, students will be able to identify what industries, businesses, agencies and other institutions exist in their communities – institutions which provide the local citizenry with services which students should be aware of.

This activity requires a certain amount of sensitivity to students' and parents' feelings about their jobs, family life, and lack of work or family life. For example, students whose parents are unemployed or deceased may be embarrassed and confused by the activity if you routinely assume every student has an employed parent. One way to avoid such problems is to make clear from the beginning that students do not have to interview an employed parent, but can also interview an employed relative or neighbor or interview a person who may not be currently employed but who has held one or more jobs in the past. You can also attempt to ensure the anonymity of the questionnaires by having students turn them in to you, without their names on them, and typing them so that there is no handwriting by which other students can guess at the family involved.

Begin the activity by breaking the class into small groups to develop their own questionnaires. You can suggest a few examples of information the questionnaires can be designed to elicit to start the groups on their task. A sample questionnaire that students can use as a model follows.

NAME:

OCCUPATION AND/OR TITLE:

1. Please describe what you do in your job.
2. a. Do you work indoors or outdoors or both?
   b. Does your work involve physical labor, mental labor, or both?
   c. What hours do you work?
   d. How many hours a week do you work?
   e. Do you work during the day or night?
   f. Do you work weekends?
3. Do you have to wear any special clothing for your job? If so, what and why?
4. Do you work with other people? With whom?
5. What is the nature of your work with other people?
6. Does your job require any special training or education?
7. Do you like the work you do? What do you like about it?
8. What don't you like about it?
9. Why did you choose this field?

10. Does your job create any problems in your family life? (Does overtime work keep you from your family? Does your work upset you so that you come home in a "foul" mood?)

11. Do you need special attitudes or feelings to enjoy and be good at your job? (friendly? caring? patient? aggressive? talkative? etc.)

12. Has your job created any problems for you because people of your sex don't usually hold the job you have?

13. Do you think I might like or be good at a job like yours when I grow up? Why?

When the questionnaires are completed, you can either allow each group to administer its own poll or you can have a class discussion in which the best questions from each group's questionnaire are combined into a single class questionnaire. For further ideas on developing questionnaires, see the section on "Polls" in the chapter on "Effective Teaching Methods for Career Education" at the end of the manual.

Before administering their questionnaires, each student "pilot tests" the questionnaire on a classmate to practice asking questions and to make sure that the questions are clear. Then give the class two to five days in which to complete the interviews with their parents. Tell students to ask the parent interviewed for a photograph of him or her on the job, illustrating some aspect of the work he or she performs. If a photograph is not available or cannot be easily taken, students can either search through magazines and newspapers for a picture that illustrates the parent's work or draw a picture which illustrates some aspect of the work. Check the section on "Interviews" in the chapter on "Effective Teaching Methods for Career Education" at the end of the manual for further information on how students can conduct successful interviews.

When the interviews have been conducted, each student reports the results to the class. In addition, all survey results and photographs are labeled and posted on the bulletin board. Keep a running tally of all the parents' responses. When it is time to change the bulletin board, put the surveys and photographs into a job bank (loose-leaf binder) as a resource guide for other students. Place a copy in the library and school guidance office.

Possible follow-up discussion topics include:

1. Based on the jobs your parents work in, let's list all the types of businesses, agencies, and industries that are in our community.
2. Why do certain communities have certain types of businesses and agencies in them and others do not? (e.g., is it because of the presence of natural resources, a cheap labor force, a citizenry with money to buy the products, the weather, generous business tax laws, the presence of a college or university, or pure accident?)
3. In general, how did most parents answer the questions on liking or disliking their work? Does it seem as though mothers or fathers enjoy their work more? Why? Do people seem to like certain types of jobs more than other jobs – for example, jobs that involve outdoor or physical activity?
4. Do any of these jobs seem to create family problems for the parents? Why do some jobs do this but not others? What kinds of jobs are more likely to create such problems? How can "breadwinners" solve problems between the demands of their jobs and their concerns about their family life?

Activity #1

5. Why do you think your parents (relatives, or guardians) chose the jobs they did? Was it just because of the salary and the work? Did they have any choice in what job they took? Can you have any choice?
6. Who should the "breadwinner" be in the family? Should it always be the man?

Useful Prior and Subsequent Activities:

- Students can invite one of their parents to class to discuss their jobs.
- Students can role play scenes of conflict between an employed parent's responsibility to his or her job and to the family.

Resources:

Occupational Information, R. Hoppock, McGraw-Hill, 330 West 42nd Street, New York, New York 10036

The Home Economist in Action, Co-Ed Book Shelf, No. 3786, 904 Sylvan Avenue, Englewood Cliffs, New Jersey 07632

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- All Occupations

SOCIAL STUDIES RELEVANCE:

- Local Community Studies
- Citizenship

Activity #2

Subject Area:
Social Studies

THE LOOK OF THE JOB

***Capsule Activity Description:**

Students construct a collage and examine the interrelations of various jobs within an occupational area.

Teaching Prerequisites:

materials needed: paper, glue, scissors, old magazines
contacts with community: none
approximate preparation time: ½ - 1 hour
approximate class time: 2 - 2½ classes

Social Studies Objectives:

to become familiar with different jobs in the local community;
to understand how these different jobs relate to one another, and, in general, how most jobs are dependent for their success on people performing other jobs well.

ACTIVITY

The purpose of this activity is to develop the students' awareness of the interrelationships among occupations. The activity centers around (1) "brain storming," (2) collage construction, and (3) discussion of completed collages.

The activity can be used appropriately in courses on the local community and in citizenship courses when the types of jobs the community has to offer and needs are discussed. The activity is particu-

*This activity has been revised from an activity developed by the counselors of Howard County. We are grateful for permission to use it. The original activity is part of *Career Education Resource Guide, Grades 6-8. It's Time to Plan*, The Howard County Public School System (8045 Route 32, Columbia, Maryland 21044: 1971). Not available for distribution.

larly useful for indicating how these jobs are interdependent and how the local community is a social fabric consisting of occupations whose existence and success are closely interwoven.

The class divides into small groups of two to four students. The division can be random, balanced by artistic and intellectual ability level, or divided by sex to bring out sex stereotyped responses. In this last possibility, one third of the groups can be all male, one third all female, and one third with sexes mixed. Do not point out this grouping pattern until all art work is completed.

"Brain Storming"

Each group picks a job that interests all members. Each group selects a different job, unless you want to stress the contrasts in perception among the groups. The group then lists all occupations they can think of which are dependent on, or related to, that occupation. For example, "policeman" might produce a list consisting of: judge, lawyer, FBI, gunsmith, dog trainer, secretary, radio dispatcher, mechanic, laboratory technician, prison guard and warden.

Collage

Once the list is completed, students bring in pictures and words from magazines and newspapers that illustrate or represent the jobs on the list. You can provide an additional supply of magazines. You will also need a supply of scissors, glue and paper, either poster paper or butcher paper.

Each group constructs a collage depicting the key occupation and its interrelations with other occupations. Students can differentiate relationships by drawing different colored lines or solid and dotted lines to connect the occupations with each other.

Different relationships students can identify include ones in which:

- the main occupation is dependent on other jobs;
- other jobs are dependent on the main occupation;
- people from two occupations must write each other;
- people from two occupations must talk with each other;
- people from two occupations must use materials produced by each other.

Discussion

When the collages have been completed, each group presents its art work to the class and the class interprets it. Then the "artists" indicate how close the class came in its interpretation to the information and ideas they intended to convey. You can also raise for discussion:

1. Whether the collages reveal ethnic or sex stereotyping and, if so, why;
2. The extent to which all jobs are interdependent with at least some other jobs;
3. Which jobs involve pleasant working relationships with other people and which do not;
4. What tasks are involved in each job;
5. Which of the jobs identified in the collages can be found in the immediate vicinity of the school or in the local community.

Useful Prior and Subsequent Activities:

- Students can construct mobiles after developing their collages.
- Students can interview one or more people in the occupation they illustrated.
- Persons employed in the occupations illustrated can be invited to class to indicate more precisely what the nature of their contacts and relationships are with people in other jobs.

Resources:

Occupational Information, R. Hoppock, McGraw-Hill, 330 West 42nd Street, New York, New York 10036

Encyclopedia of Careers and Vocational Guidance, Vols. I and II, William E. Hopke, Doubleday, Garden City, New York 11530

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Homemaker

SOCIAL STUDIES RELEVANCE:

- Family Studies
- Local Community Studies

Activity #3

Subject Area:
Social Studies

COOKING, SEWING, AND CLEANING

Capsule Activity Description:

Students observe and interview their family homemaker.

Teaching Prerequisites:

materials needed: lined paper, pencils
contacts with community: observing and interviewing family homemaker
approximate preparation time: ½ - 1 hour
approximate class time: 2-4 classes

Social Studies Objectives:

to develop an understanding of the role of individual family members and of the need for them to work together.

ACTIVITY

This activity looks at the occupation of homemaker, a job that society often does not consider an "occupation" and to which Americans usually do not accord much prestige or give many rewards. The activity stresses the importance of homemaking and treats it like any other job. Students discover the wide range of tasks performed by homemakers, the services and products that result from their work, and their importance for family well-being.

The activity can be integrated into the social studies curriculum not only whenever family structure and roles are studied, but also community services, since homemakers are dependent on other workers in the community for goods and services.

Activity #3

This activity requires a certain amount of sensitivity to students' and parents' feelings about their jobs, family life, and lack of work or family life.

For example, students whose parents are problem drinkers, irresponsible, ill or deceased may be embarrassed and confused by the activity if you routinely assume every student has an active or efficient homemaker. One way to avoid such problems is to make clear from the beginning that students do not have to observe or interview a parent who is a homemaker, but can also watch and question a relative or neighbor who does the homemaking tasks. You can also attempt to ensure the anonymity of the questionnaires by having students turn them in to you, without their names on them, typing them so that there is no handwriting by which other students can guess at the family involved.

The initial step in the activity is for each student to observe the family homemaker for two to five days to discover the nature and variety of the job. You or your class can write a short note home to parents telling them what you are doing and why in order to prepare parents for the subsequent interview sessions.

As homework, students observe the homemaker performing various tasks and with his or her help draw up an experience chart of each day's activities. A sample sheet follows.

HOMEMAKER ACTIVITY CHART

6:30 a.m.	got up and dressed
6:45 a.m.	started to make breakfast
7:00 a.m.	got children out of bed
7:20 a.m.	cooked breakfast
7:50 a.m.	dressed children for school
8:00 a.m.	washed breakfast dishes
8:20 a.m.	made beds
8:40 a.m.	made up grocery list
etc.	

After each observation/interview session, three or four volunteers read their Homemaker's Activity Charts to the class. Discuss the following points after the readings:

- similarities and dissimilarities between charts (list on chalkboard);
- the activities that appear to be most important to the homemaker's work (list on chalkboard) and why;
- which activities interest or do not interest the students and why;
- which ones could be performed equally well by men or women;
- which tasks can be done jointly by two or more members of a family.

Students calculate and record the amount of time spent on each activity next to the appropriate activity on the Activity Chart.

Example:

8:00 a.m.	washed breakfast dishes	20 mins.
8:20 a.m.	made beds	20 mins.
8:40 a.m.	made up grocery list	10 mins.

On the last observation/interview day, in addition to the Activity Chart, students ask the homemaker several questions. The class can make up its own questions for this portion of the activity. Examples follow.

1. Were these past few days normal ones for you? If not, why?
2. Does this job require any special training or education?
3. What do you like best about this job?
4. If you could improve your job, how would you change it?
5. Is there any other job you would rather be doing? If so, why aren't you doing it?
6. Could your family get along without a homemaker?
7. Do you feel society gives you the proper prestige and credit for what you do?
8. Do you feel your job is as important as what your spouse (or anyone who works outside the home) does? Why?
9. Do you work outside the home as well as keep house?

A discussion session follows involving reading three or four more daily Activity Charts and a number of responses to the above questions. Prior to a general class discussion, students average the time spent by their homemaker on each activity each day, using the information from the Activity Charts. The information is recorded in the following manner on a separate piece of paper.

Activity	Average Time Spent
washing dishes (per day)	1 hour
making beds	20 mins.
washing clothes	45 mins.

Students can also draw a graph displaying this information.

A discussion follows covering the following points and any others the students may raise:

- Why are most homemakers women?
- Can men do this job as well as women?
- In the future will more men become homemakers and more women "breadwinners"?
- Should more men become homemakers or share in homemaking tasks?
- Would you like to be a homemaker? Why or why not?
- Can a parent work outside the home, also be a homemaker, and be successful at doing both?
- Whom in the community does a homemaker depend on for goods and services?
- Does the average homemaker have much leisure time?
- Do you think the profession of homemaker is necessary to the family and the way we live?
- Could anything replace the homemaker?
- What are the frustrations of being a homemaker? What are the satisfactions?

Complete the activity with role plays of homemaking situations based on the information students gathered in their observations, interviews, and discussions. Two sample role profiles follow. Students can revise them, use them, and then develop ones of their own.

Activity #3

Role Profile One:

Homemaker: You have had a terrible day. You have run out of diapers and because both twins are sick, you can't get to the laundermat to do a wash. You don't know what to do. You tried calling a neighbor, but she's not home. The twins seem to be getting sicker and crying louder, and you're not feeling too well yourself. You really should take the babies to the doctor, but your husband (wife) took the car. What are you going to do?

Role Profile Two:

a. **Homemaker:** You love your new job. You are back at the hospital doing work you really find interesting. Getting the babysitter for Philip was easy, but trying to get the housework done and dinner ready at a reasonable hour have been problems. Your husband (wife) is just going to have to give you some help. Your husband (wife) has just come home and you haven't had time to get dinner ready yet. And you're pretty tired too. What do you say to your spouse?

b. **Husband (wife):** You don't understand why people aren't happy with what they've got. You'd think that watching Philip and cleaning house would be a terrific way to spend a day. You can't think of any reason why somebody who can do those things would rather have a "real" job. Dinner better be ready on time tonight when you get home – you're starved. You walk in the door and notice that dinner isn't even on the stove. What do you say to your wife (husband)?

Useful Prior and Subsequent Activities:

- For comparison, students can study other members of the family using the same observation and interview approach.
- Invite a panel of homemakers (preferably parents) to class for a question and answer session. Include both full-time and part-time homemakers on the panel.

Resources:

Film: "Jobs for Women: Where are You Going," McGraw-Hill, 330 West 42nd Street, New York, New York 10036

Book: **An Unfinished Woman** by Lillian Hellman (Bantam: New York), paperback

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Service Trades
- Barber
- Beautician
- Auto Mechanic
- Television Repairperson
- Restaurant Owner
- Funeral Home Director

SOCIAL STUDIES RELEVANCE:

- Local Community Studies
- Citizenship

Activity #4

Subject Area:

Social Studies

TO SERVE YOU BETTER

Capsule Activity Description:

Students survey parents and neighbors to discover need and use for people in service trades.

Teaching Prerequisites:

materials needed: magic markers, large sheets of poster paper
contacts with community: interviews with parents
approximate preparation time: ½ - 1 hour
approximate class time: 1½ - 2½ classes

Social Studies Objectives:

to learn what jobs in the community provide services the public needs;
to learn how polls and surveys are developed, administered and interpreted

ACTIVITY

This activity deals with various occupations in the service trades. People who are employed in these trades provide necessary services to the members of a community. In the exercises that follow, students learn about these various careers from the perspective of the consumer. The activity thereby enables students to discover first hand not only what people do for a living and what services the community provides, but also to become aware of the ways in which various occupations are perceived by the people who buy or use them. The activity accomplished these objectives by asking students to interview consumers to learn about workers in the service trades.

You can integrate the activity into your Local Community Studies course whenever you discuss local community services students now or in the future will need. You can also use the activity in

any social studies course in which poll results are used, because the activity helps students learn how to interpret poll results based on personal knowledge of how questionnaires are constructed and administered and of their inherent limitations.

A sample questionnaire is provided at the end of the activity. You can give it to your students as their survey instrument or you can draw up one of your own as a class. You can also divide the class into small groups for the purpose of brainstorming a questionnaire. If you select this method, give students the following instructions:

- You want to find out as much as you can about a job.
- Unfortunately, the person who fills that job is not available today.
- You decide the next best thing to talking to the person who does the job is to talk to a person who **benefits** from that job and **uses** its services in some way.
- You can't ask too many questions, because the person answering the questions will get tired and not wish to answer any more. At the same time, however, you need to get as much information about the occupation (duties, salary, working conditions, etc.) as you can.
- In your small groups, take ten minutes now to think of as many good questions as you can to ask these people and we will use the best ones in our survey.

Groups brainstorm for ten minutes. One student acts as chairperson to direct the group if they get bogged down, another acts as scribe to record the questions. Once the brainstorming is done, put the questions on the chalkboard as they are read aloud by the group. The best questions, as determined by the class, are used in the survey.

Once the survey has been developed, drawn up, and distributed to the class (three copies per pupil), each student chooses one occupation to research. Students then take their surveys home and interview three people (e.g., a parent, neighbor and relative) concerning the one occupation they chose. Allow the students a sufficient time to complete their surveys.

As the surveys are completed, students record responses on giant retrieval charts supplied for each occupation. These charts are hung around the room low enough so students can write on them. The retrieval charts can be similar to the attached sample, allowing room for students to fill in their remarks. Keep a magic marker next to each chart to facilitate completion. Only new information is added to the charts, with check marks used to indicate repeated responses. For additional information on constructing and administering polls, see the sections on "Polls" and "Interviews" at the end of the manual.

When the surveys have been completed and the retrieval charts filled in, students regroup, according to occupation, to make a presentation on their findings. The presentations are in the form of another interview. This time the interviewee is the worker the group studied, played by a student. The presentations can be a simple one-on-one interview or a skit utilizing all members of the group. By means of these role played interviews, groups present as much information as possible about their worker to the class.

After each presentation, the class discusses the following issues:

- Do you think the presentation was realistic and information true? Why? Why not?
- How could we check to see if our information is correct?
- What does our information tell us (be it right or wrong)?

- When we think of a beautician or funeral director does a special type of person come to mind? For example, do we assume there is something "weird" about everyone who runs a funeral home?
- Why are so many of these occupations filled by men?
- After learning about these different kinds of jobs, are there any skills or personality traits these people have in common?
- Why do people become barbers/beauticians/auto mechanics/television repairpeople/restaurant owners/funeral home directors? Do you think you would want to do work like this?
- Do people know how others in the community feel about their occupation and their work? Do they care? Should they? How can they respond to a community's negative view of their occupation: should they ignore it, try to alter it, or confirm it?

Prior and Subsequent Activities:

- The class can take a field trip to visit one or more of the businesses dealt with in the activity.
- Guest speakers (parents) can be invited to class to speak to the students on their first-hand experience in a service job.

Resources:

Film: "Cosmetologist," Hairdressers and Cosmetologists Association, 175 Fifth Avenue, New York, New York 10010

Books: **Is My Job For You.** Dick Gardner, John Day Co., New York, New York.

Occupations and Careers, Feingold and Swerdroff, McGraw-Hill, Manchester, Missouri.

Comments from Teachers and Students after Using the Activity:

SAMPLE QUESTIONNAIRE

Name of Person Interviewed:

_____

Occupation (circle one)

Barber, Beautician, Auto Mechanic, Television Repairperson, Restaurant Owner, Funeral Director Other (write in):_____

1. Do you ever use the services this occupation provides? _____
   If yes, how often? _____ times per week
   _____ times per month
   _____ times per year

2. What does this person do for you? Be specific.
   (Brief description of duties)

3. How does this person treat you in ways that you like and don't like?
   (rudely? politely? quickly? slowly? expensively? etc.)

4. Do your friends use these services?
   All my friends do _____
   Some of my friends do _____
   None of my friends do _____

5. Do you know if this person needed training for the job?
   How much training? _____
   What kind of training? _____

6. About how much money do you think this person makes? _____

7. Do you think this job would be boring? Why?

8. If you had a job like this one, would you change it in any way to make it better? If so, how would you change it?

9. Do you think you would like a job in this field? Why or why not?

SAMPLE RETRIEVAL CHART

Service Occupation: Barber

	YES	NO	COMMENTS
1. Do you use the services this occupation provides?			
2. Do your friends use the services of this person?			
3. Did this job require training?			
4. etc.			

OCCUPATIONAL FOCUS:

- Salesperson
- Small Business Owner
- Repair Person

SOCIAL STUDIES RELEVANCE:

- Local Community Studies
- Citizenship

Activity #5

Subject Area:
Social Studies

THE BICYCLE SHOP

Capsule Activity Description:

Students use role plays to experience small business occupations.

Teaching Prerequisites:

materials needed: copies of the role profiles
contacts with community: none
approximate preparation time: ½ - 1 hour
approximate class time: 1 - 2 classes

Social Studies Objectives:

to understand the nature of selling and buying;
to learn about the problems of small business ownership and management;
to identify methods for redressing consumer grievances.

ACTIVITY

In this activity, students role play consumer problems related to buying, selling, and repairing bicycles. This topic was chosen because of its relevance to junior high students, because there has been a recent increase in the number of bicycle sales and repair shops throughout the country, and because bicycle shops represent most of the typical problems of small business ownership and management. However, you and your students can develop role plays on any of many small businesses, including shoe repair shops, bakeries, clothing stores, toy stores, travel agencies, watch and camera stores, barber shops and beauty salons, greeting card shops, bookstores, and variety stores.

You can use the activity in a local community studies course whenever you discuss the problems small business face in a recession. In addition, the role plays focus on consumer complaints, making the activity relevant whenever you discuss consumerism. A discussion of economics in a

citizenship course can benefit from the activity's focus on the role of small businesses in the economy, business failures and bankruptcy, and the concepts and practice of entrepreneurship and laissez-faire. Finally, the salesperson's and business person's dilemma between his or her civic duty and desire for profit is raised in the activity, making the exercise a useful one in citizenship classes which discuss civic responsibility.

After each role play, students can discuss one or more of the following issues:

1. What are some of the problems small businesses must face in dealing with customers? Are these likely to be the same problems big businesses must face?
2. Are consumers likely to face different problems with small businesses than with large ones?
3. How can consumers seek redress of grievances when they have been sold shoddy or defective merchandise or purchased goods under false pretenses?
4. Are small businesses likely to respond to consumers in terms of sales and handling complaints and repairs differently in a recession than in a healthy economic situation?
5. How can a small business' responses to consumer complaints influence its profits and losses?
6. Is a small business likely to treat its customers differently when it first opens than when it has established itself?
7. What skills does a salesperson need to be successful?
8. What kind of personality does a salesperson need to be successful? Does he or she have to be aggressive, hard-nosed, and tough-minded? What about store managers or small business owners: what personality or characteristics do they need to succeed?
9. What are the personal satisfactions that come from "making a sale" or doing a good job of repairing an appliance? What frustrations are involved in failing to "make a sale"? What satisfactions do people derive from managing their own business, supervising the work of others, and being a business person in the community? What frustrations are involved?
10. When a businessperson's or salesperson's desire to make money conflicts with his or her civic duty to serve the public, which usually wins? Which should win? (Use the role plays as examples of this conflict.)

Three sample role plays are provided below. You or your students can revise them to suit your particular needs or develop ones of your own. Before engaging in them, students can participate in one or more of the "warm-up" exercises suggested in the section on Role Playing in the chapter on "Effective Teaching Methods for Career Education" at the end of the manual. After the role plays, you can encourage students to develop their own role profiles in small groups, with each group presenting its profiles to one other group which then plays the parts.

SITUATION 1: BUYER BEWARE

Purchaser

You want to buy a bicycle but you don't know whether to get a one-, three- or ten-speed or how much money to pay. You plan to use your bike for weekend trips of five to fifteen miles, but that's about it. There's a small chance you might use it some days to commute to work, but that's not likely. You have come for advice to the Best Buy Bicycle Shop. You enter and go up to a salesperson. What do you say?

Salesperson

You work in the Best Buy Bicycle Shop. You sell all kinds of bikes. You want two things: lots of sales, preferably of expensive bikes; and satisfied customers. Sometimes you have to decide whether you want a satisfied customer buying a less expensive bike or an unhappy customer buying a more expensive one. A customer who looks very uncertain has just approached you. How will you handle his (her) questions?

SITUATION 2: PRESSURE-CONFORMITY

Purchaser

You want to buy a new bicycle for your eleven-year old son (daughter). He (she) has outgrown his (her) old bike and wants you to get him (her) a fancy "high-rise" bike with a "banana" seat and stick shift. You think they're unsafe, too expensive, and don't last too long. Besides, your son (daughter) will try to do all kinds of unsafe tricks and games on a "high-rise." You want to get him (her) a three-speed English bike that you feel is safer. You have decided to ask a salesperson for advice, taking your son (daughter) with you. You both have just walked into the Swell Sales Bicycle Store and gone up to the salesperson. What do you say?

Son (Daughter)

You have outgrown your old bike and want your father (mother) to buy you a new, fancy "high-rise" bike with a "banana" seat and stick shift. That's the kind of bike all your friends have, and you like the looks of it. It makes you feel like you're riding a motorcycle – in fact, as soon as you're old enough and have the money, that's what you plan to buy. Your father (mother) doesn't like the "high-rise" bikes because he (she) thinks they're poorly made and unsafe. You think they're as safe as any other bike. And besides, you really can't do as many tricks on an English bike as you can on a "high-rise" – although you can't tell your father (mother) shopping for a bike. You've both just entered the Swell Sales Bicycle Store and walked up to a salesperson. What do you say?

Salesperson

You are the salesperson in the Swell Sales Bicycle Store. You are an expert in children's bikes. It's so much fun when a parent and child come in looking for a bike and argue over what kind to buy. Usually, the kid wants the more expensive bike. But you have to watch yourself. If you side with the kid, the parent may get angry with you and buy the bike somewhere else. A parent and child are coming over to you right now. You wonder what kind of disagreement they'll have!

SITUATION 3: PRESSURE, HARD SELL

Purchaser

You have decided to buy a medium-priced three-speed bike, for around $75. You want it to run errands and make short trips, nothing special. You walk into Rodney's Rugged Bike Shop to buy a Modesto Model 99Z. You walk up to the salesperson. What do you say?

Salesperson

You are a salesperson in Rodney's Rugged Bike Shop. You get a commission on every bike you sell – and the more expensive the bike, the larger your commission. In addition, you are tired of seeing customers buy what you feel are cheap, clumsy bikes when they could buy a decent ten-speed for $125 to $175 and have a bike that will last and give a comfortable ride. Yet customers keep coming in asking for bikes like the three-speed Modesto 99Z, which sells for $70 when for only $50 more they

could buy a ten-speed bike like the Superba XKG. A customer has just come in the store and comes up to you. How will you handle him (her) if he (she) too wants a bike like the Modesto 99Z?

Useful Prior and Subsequent Activities

- Students can invite a salesperson to class to observe the role plays and comment on them.
- Students can submit their "consumer complaints" to a consumer protection agency for a suggested resolution.
- Students can develop a list of things to observe when they purchase goods and record their observations after their next ten purchases. Observations can focus on the salesperson's attitudes toward his or her job and toward customers, and on any sales techniques used.

Resource:

Small Business Administration
Public Information
1441 L Street, N.W.
Washington, D.C. 20005

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Civil Service Job
- Local Government Agency Position (e.g., firefighter, welfare worker, clerk, police officer, assessor, bill collector)

SOCIAL STUDIES RELEVANCE:

- Citizenship
- Local Community Studies

Activity #6

Sbbject Area:
Social Studies

JOBS IN CITY HALL

Capsule Activity Description:

Students take field trips and conduct interviews to investigate the career opportunities and job requirements in local governmental agencies.

Teaching Prerequisites:

materials needed: none
contacts with community: tour of "city hall," interviews with local government officials
approximate preparation time: 1 - 3 hours
approximate class time: 1 - 6 classes

ACTIVITY

This activity focuses on career opportunities in local government and furthers understanding of the actual operations of local government.

The activity is designed either to parallel a social studies or civics unit on local government or to be the skeleton around which such a unit can be developed. In addition, you can use any one or combination of the five parts to the activity, rather than implementing them all.

The five parts to the activity are:

1. Lecture presentation on the structure of local government and/or reading assignment in civics textbook;

Activity #6

2. Field trip to one or more local government agencies;
3. Library research on careers;
4. Interviews with employees in local government agencies; and
5. Writing and distributing a booklet on careers in local government.

Part One: Lecture/Reading: The Structure of Local Government

Although this part of the activity will be covered already in your textbook and lecture notes and needs no special preparation or comments, you can add to these presentations any audiovisual materials you may have access to which describe local government. Cover all major aspects of local government, including mayor, city or town council, police and fire departments, and sanitation, agriculture, housing, welfare, recreation and tax agencies.

Part Two: Field Trips

Having gained an overview of their local town government's components and structure, students in small groups or as a class take field trips to as many local government agencies as possible. Arrangements for setting up such trips are suggested in the chapters on "Liaison with the Community" and "Effective Teaching Methods for Career Education (Field Trips)" at the back of the manual. Arrangements and transportation for the trips can be facilitated considerably if you and your students enlist the assistance of parents to identify places to visit, make contact with these agencies, and provide transportation and supervision.

Before visiting any agency, students develop an observation guide listing the things they will be looking for and asking questions about. The guide can include such items as:

- What kinds of people seem to work here: men? women? young, middle-aged or older people? ethnic minorities? the handicapped?
- What seems to be the general attitude of the workers toward their work: satisfied? bored? angry? cheerful? careful? sloppy? relaxed? tense?
- Do most people work by themselves or is there a lot of talk and other interaction among the workers? Is the talk about work or is it just social conversation?
- What, exactly, are the workers doing: talking with citizens? paperwork? writing reports or charts? talking on the telephone? entering and leaving the building? Do many of the workers seem to be leaving the building to do some work elsewhere?
- Are there town officials and workers from other agencies present in this agency? What do they seem to be doing?

During the trip, students ask for copies of brochures, flyers, and other literature the agency may have which they can take home for further reading about the jobs the agency provides.

After each trip, the class discusses what it observed, using its observation list as a guideline for its discussion. If what was observed at an agency – e.g., fire department – is not the major work the employees engage in, class discusses what does constitute their major work and where it is performed.

Students also note whether any agencies seemed to have few women, men, or minorities employed in them and whether people of certain ethnic backgrounds or of only one sex were doing only certain types of jobs. Class discusses possible explanations for such observations.

Part Three: Research in the Library on Careers

The research part of the activity can be conducted in small groups or individually. Each group or student selects one agency it wants to investigate more thoroughly. Then, using the library, the students read appropriate materials found there and any brochures, leaflets, etc. which they were given during their field trips. Instruct the class to discover the following information from their research:

1. What are the different jobs in the agency they are researching?
2. What are the skills and education needed to be hired and be successful at them?
3. What tasks does each of these jobs involve?
4. Pick one of the jobs you have identified and do further research into what people in this occupation do. Then write a one-page description of the job you have chosen to research, indicating:
   - what education and skills the person needs to have, and
   - what specific tasks he or she performs at work.

Encourage students to draw freely on their experiences during the field trips as they write their job descriptions.

Part Four: Interviews

For this part of the activity, students interview a local government employee who holds a job they did **not** research, so that students get wider exposure to the types of local government agencies that exist and the different jobs available in local government work. You and your students can arrange the interviews by making use of the services of parents – many of whom themselves may be appropriate individuals to interview if they work in local government agencies. The chapters at the end of the manual on "Liaison with the Community" and "Effective Teaching Methods for Career Education (Interviews)" provide further information for arranging and conducting interviews. If interviews are not feasible, you can invite guest speakers from the agencies to talk with the class.

Before conducting their interviews, students develop a list of questions they want to ask and "pilot test" the questionnaire and practice their interviewing skills on a parent or another student. This "dry run" may indicate the need to make the questions clearer, shorter or mor specific. A sample questionnaire follows.

SAMPLE INTERVIEW QUESTIONNAIRE FOR GOVERNMENT WORKERS

Job Title: _____

Agency: _____

Sex: _____

Approximate Age: _____

1. What are the major tasks you do as part of your job?
2. Are there many people in your agency who do the same thing? How many?
3. How did you decide to become a _____?
4. What education and training did you need to become one?
5. Do you like your job? What do you like and dislike about it?
6. Is there a need for more people in this field? What about five or ten years from now?

7. Are there few women (men, minorities, etc.) working in this job? Why?
8. Do you work with people from any of the other local government agencies? If so, what do you do with them?
9. How important is your agency to the community? What does it do for the community?
10. Is there other important information about your job and this agency I should know?

After conducting their interviews, groups or individual students write a one or two page summary of the results, stressing the career aspects of the job – training and tasks. Focus on **why** people take certain jobs – what they think they will like about them, including concern not only about the type of work involved and the salary, but also concerns about having job security, following in a parent's or role model's footsteps, being "desparate" for a job and taking the first opening available, having evenings and weekends free, avoiding or desiring a job that requires responsibility or initiative, or finding a job which offers the opportunity to exercise authority, leadership, or creativity. If the same jobs were also researched by other students as part of Part Three, these summaries can be attached to the corresponding one-page descriptions of the researched occupations.

Part Five: Developing Career Booklets

When the interview reports have been completed, the groups or class as a whole compiles the written results of the activity into a series of booklets on jobs in local government which you can duplicate and make available to other students in the library. Classes in following years can add to and update the booklets after they engage in the activity.

Finally, you can discuss what students learned about the structure and nature of local government. Possible topics for treatment include:

1. What are the major agencies of local government?
2. What does each do?
3. How do they relate to each other positively and in conflicting ways?
4. How efficiently do these agencies seem to be performing their tasks?
5. How could the work these agencies do be improved?
6. Who seems to make the important decisions in these agencies? Who in the community can and does exert influence on these decision-makers?
7. Does the community lack any agency it should have?

Useful Prior and Subsequent Activities:

- Employees in the agencies can be invited to class to critique the booklets.
- Students can develop articles on the basis of their research and submit them for publication to the school and community newspapers.
- Students can role play many of the tasks performed in local government agencies, such as police responding to a house call, housing department officials deciding whether a high-rise building should be allowed to be built, or an elected official deciding how to resolve a conflict between the voters and a local industry.

Resources :

For information on Government jobs, write to:

Washington Area Office
U.S. Civil Service Commission
1900 E Street, N.W.
Washington, D.C. 20006

Comments From Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Food Industry Employees
- Franchise Operators

SOCIAL STUDIES RELEVANCE:

- Local Community Studies

Activity #7

Subject Area:
Social Studies

THREE BURGERS, NO CATSUP!

Capsule Activity Description:

Students investigate the fast food franchise industry through research, interviews and observations and evaluate it in light of current course topics and as a career.

Teaching Prerequisites:

materials needed: none
contacts with the community: observation of a franchise store; interviews with store and staff operators
approximate preparation time: ½ - 1 hour
approximate class time: 1½ - 2 classes

Social Studies Objective

to study the role of entrepreneurship as typified in the franchise industry;
to study the impact of fast food service restaurants on the eating habits, mobility patterns, and social behavior of Americans;
to study the nature of advertising.

ACTIVITY

The purpose of this activity is for students to act as a consumer group, à la Nader's Raiders, to explore the explosion in the fast foods franchise industry. There are two major divisions in the activity. In part one, students do background research on the nature of franchising. In part two, students research franchising in their local community. The exercise lasts a period of a month; however, most of the work takes place outside of class time. Class time includes a short introduction followed a week later by a class period devoted to the part one report and sub-division of the class into groups. Except for occasional short group meetings at the end of class, there is no major class time used until the final reports are ready about three weeks later. These reports take no more than two class days.

Activity #7

The activity can be easily integrated into a local community studies course whenever franchising is discussed and also when advertising as a mechanism for increasing or maintaining public demand for products and as a multi-billion dollar business technique is discussed. The activity also has relevance for such a course in terms of discussions of life styles of today's youth (gatherings around the Dairy Queen), ways in which youngsters are socialized into the work force (as waitresses, waiters, busboys, busgirls, and car hops), the interrelationship between cars and fast food franchises, and the relationship between eating easily accessible and inexpensive restaurant-bought food and the decline of family life around the dinner table.

Part One. Students begin the activity by doing a modest amount of basic research into the nature of franchising in general and the peculiarities of the fast food franchise industry in particular. The research can include using library sources, economics textbooks, interviews with local consumer advocate groups, better business bureaus, small business associations, and the Chamber of Commerce, and a trip to the local government agency responsible for licensing fast food franchise establishments. Students can conduct this part of the activity by dividing up the research among different groups of students or as an entire class. When the research is complete, each group or the class as a whole develops a report which:

- describes the growth of the fast food franchise industry;
- explains the industry's rapid growth;
- describes the different types of businesses which are involved in franchise operations in addition to fast food outlets;
- and indicates how many franchise operations have failed and why they failed.

Part Two. The class identifies four or five types of local franchise operations, such as hamburger and coke places (McDonalds, Burger King, Carrol's), ice cream places (Tastee Freeze, Dairy Queen, Mr. Softee), specialty foods (Kentucky Fried Chicken, Pizza, Fish Fry), and other local establishments that are regional but still franchises.

Students then break into small groups, and each group selects a type of franchise to research. First, groups write to the main office and district office, if there is one, asking for all the information that they can send on operating one of their franchises. If the material is not sufficient enough to give the groups the "company view," students write back with specific questions, particularly in the area of cost outlay, length of contract, amount of independence, and personnel policy regulations.

The groups then interview people working for the franchises they have chosen to study. Usually there are employees within the school or community or friends of the students in the neighborhood who can help set up the interviews. It is better not to interview employees at their place of work. A sample of an interview form each group develops follows:

Job title _____

Job tasks _____

Age of worker _____

Length of time working there _____

Starting salary, raise schedule _____

1. What are the requirements to get this job? _____
2. What hours and/or shifts do you work? _____
3. What opportunities for advancement are there? _____

4. What is the turnover of employees (number and frequency)? _____
5. What are the reasons for this turnover? _____
6. What are the advantages of this job? _____
7. What are the disadvantages?

Each group interviews two or three people per franchise operation.

The third step of the investigation is to observe the operation. Students pick three or more different times in the week and spend from ½ - 1 hour observing the operation. Students choose varying times to get the "full picture," for example, weekday at 8 p.m., Friday at 10 p.m., Saturday at 12 noon and Sunday at 4 p.m. Students observe three aspects: (1) employees, (2) customers, and (3) the general atmosphere. Each group develops a checklist of things to observe, as in the following illustration.

Employees:

1. Do they appear to enjoy
   their work? _____
   the other employees? _____
   the customers? _____
2. Are they
   clean? _____
   polite? _____
3. Do they get a chance to rest? _____
4. What is their usual physical position? _____

Customers:

1. Who seems to frequent the establishment? (Keep a count)
   Men _____
   Women _____
   Boys _____
   Girls _____
   Children _____
   Families _____
2. How many people frequent the operation for a
   snack _____
   light meal _____
   major meal _____
3. How do the patrons arrive at the operation?
   by car _____
   on foot _____
   by bicycle _____
   by motorcycle _____
4. What activities do the clientele engage in besides eating?
   talking _____
   fooling around _____
   picking up dates _____

meeting people _____
fighting _____
watching passers-by _____

5. How many patrons seem to come here regularly?
   regular customers _____
   one-time customers _____
6. Is the operation frequented by tourists? Where are they from? (check license plates)

The Establishment:

List words, especially adjectives, that occur to you that describe the working situation. List them under the two general topics listed below or under any other topics that occur to you.

the Building **the Customers**

After conducting the research, each group reports its findings to the class and compares them. In particular, the class identifies the advantages and disadvantages to working in a fast food franchise operation and to owning and managing a franchise business. The class then relates the results of their research to the subject area content of the course they are studying. For example, if the activity was conducted as part of a sociology course, the class can identify the ways in which the fast food franchise industry may have altered the eating habits, social life, and transportation problems of the community.

Useful Prior and Subsequent Activities:

- Students can write their findings into an article for submission to the school and/or community newspaper.
- Students can invite a member of the Chamber of Commerce, Better Business Bureau, or small business association to class to listen to their reports and comment on them.

Resources:

Small Business Administration
Public Information
1441 L Street, N.W.
Washington, D.C. 20005

McDonald's Corporation
One McDonald's Plaza
Oak Brook, Illinois 60521

Kentucky Fried Chicken Corp.
1441 Gardiner Lane
Louisville, Kentucky 40213

Burger King Corp.
P.O. Box 520783
Biscayne Annex
Miami, Florida 33152

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Newscaster
- News Editor
- Video Equipment Specialist
- Audio Equipment Specialist

SOCIAL STUDIES RELEVANCE:

- Citizenship
- History

Activity #8

Subject Area:
Social Studies

THE SIX O'CLOCK NEWS

Capsule Activity Description:

Students study, then produce a news broadcast.

Teaching Prerequisites:

materials needed: recording equipment or props (optional)
contacts with community: tour of television or radio studio
approximate preparation time: 1 - 2 hours
approximate class time: 3 - 6½ classes

Social Studies Objectives:

to learn how the news is prepared and disseminated by the mass media;
to develop the skill of critically evaluating news sources;
to research one or more specific historical events of the teacher's or students' choice.

ACTIVITY

The purpose of this activity is to combine a social studies view and career education view of the broadcast industry. There are two parts to this activity: a field trip to a television or radio station and a simulation of a news broadcast.

You can easily integrate the activity into any part of a history course if you select Option One in which students produce a dramatization of an historical event, such as the Boston Tea Party, life on a Southern slave plantation, a Cabinet meeting on the Cuban Missile Crisis, or the Lincoln-Douglas Debates. The activity can also be used whenever you take up the topic of propaganda or the media in a citizenship course.

In the first part of the activity, students tour a local television or radio station. If a tour cannot be arranged, you can substitute a guest speaker. Before taking the tour, students develop a list of

questions they want to ask and observations they want to make centering around how the news is produced; that is, how the actual words and text are written and edited and how the audiovisual parts of the presentation are produced. Sample questions students can ask follow.

1. What are the specific steps by which a news story progresses from an historical event to a news item on television (or radio)?
2. Who is responsible for doing each task?
3. Who decides what events should be written about, photographed, and broadcast?
4. What guidelines are followed in writing the news to ensure that the information is presented as objectively as possible? What guidelines are followed, for example, to prevent sex, ethnic, class, religious and political biases?
5. Is there significant minority, political, religious, and sex representation among the staff producing the news programs?
6. How do you decide where and how often to insert commercials?
7. How do you handle the time pressures – emotionally and operationally?

To prepare for the field trip, students spend several evenings prior to the tour watching or listening to the news broadcast of the station they will visit. This will ensure advance familiarity with the station's programming pattern and product. Contacts can be made with stations either through school officials or parents who know appropriate people to talk with, or by calling the stations directly and asking for the public relations department.

After the tour, the class develops a chart of the steps involved in producing a television or radio news program. The chart is duplicated and each student is given a copy. Students can then begin to develop their own news program.

Before the newscasts are developed and presented, students develop an observation check list for students who will be observing the newscasts to fill out during and after each presentation. A sample observer check list follows:

OBSERVER CHECK LIST

1. Is the newscast too slow or too fast?
2. Is the newscast hard to understand or poorly organized?
3. Is the newscast leaving out important parts of the event it is describing? (Describe these missing parts after the newscast.)
4. Is the newscast spending too much time on certain things and not enough time on others? (Describe this unbalanced treatment after the newscast.)
5. Is the newscast editorializing – that is, giving opinions rather than facts? (Keep a record below of examples of editorializing.)

6. Is there any bias shown? If so, in what areas: sex political ethnic geographic religious
7. Are there any instances of propaganda taking place? If so, check in what areas:
   1. **Bandwagon:** Language is used that suggests that 'everyone' or 'all the people' are doing it or using it. The listener doesn't want to be left out, or does not want to appear 'out of it.'
   2. **Glittering generality:** A report uses words like 'best,' 'the only,' and 'great.'

3. **Humor:** Jokes are made at the expense of someone being quoted or filmed.
4. **Statistics:** Newscasts often leave out contingencies or variables such as who conducted the study or what kind of people were polled.
5. **Cardstacking:** Giving one-sided portrayals of the issue – all the good parts, for example, and none of the bad.

8. Do the "newscasters" seem to be enjoying their work or are they bored or nervous?

There are many formats and styles the students' newscast simulation can take depending on the amount of time you have to spend on the activity and the availability of audiovisual facilities. Ideally, several small groups of students videotape their own separate news broadcasts and compare and analyze the results. Where this is not feasible, other alternatives include small groups preparing a newscast, which they then role play in front of the class as if it were an actual newscast setting, or the class divides into small groups, each of which is responsible for preparing **part** of a single newscast which the class can then present to the school or to another class. In addition, a radio broadcast can be simulated by using tape recorders or simulated with an imaginary microphone.

There are at least three options you and your students can consider in preparing their newscast. Different groups can all choose the same option, or they can pick the option which intrigues them the most.

Option One: Newscast of a Past Historical Event

This method, similar to the television show "You Are There," requires students to research an historical event (which they may have already done as part of your American history course) in enough depth so that students can role play the historical characters and replicate the event. Different groups of students can research and present different historical events and compare results. Two or more groups can also research and present the **same** historical event and **still** compare the results. The latter approach enables the class to learn how the news can distort reality, because no two groups are likely to give identical presentations even of the same historical event. The class can then discuss what the differences were, why they occurred, what implications these differences have for our ability to learn about historical events as they "really" occurred, and what these differences indicate about whether newscasts can present the "absolute" truth about an event to the public.

Once the class or groups understand "their" historical event and its significance, they can begin work on:

- writing the script or outlines for the actors and narrators to use in presenting the story;
- producing props, costumes, audiovisual materials, and other paraphernalia to go along with the presentation; and
- practicing the presentation.

This presentation can occur either during your class, during study halls and free periods, or before and after school. However or whenever it is done, instruct and remind students that their objective is to present as accurately as possible what happened on a given historical occasion. As an alternative approach, the groups can also develop a second or third ending to the event to illustrate other possible ways the event might have terminated. Discussion can then follow on why the event ended in the way it did and not in one of the alternative endings the students presented.

Activity #8

Option Two: Newscast of a Current News Event

Unlike Option One, this option consists of narration only, whereas Option One also involves simulation of an event. For Option Two, students can write the text for a newscast based on:

- world or national news obtained from weekly news magazines and newspapers;
- local news events, reviewed either in the community newspaper or, preferably, by observing an event in the community as it occurs--for example, a demonstration, hearing, meeting, speech, or athletic event; or
- school news, such as a sports event, fight, new course being offered, disciplinary procedure, unusual class activity, or cafeteria incident.

Option Three: Newscast on Fictional or Future Event

In this option, students create an event, treat it as if it actually occurred, and present a newscast describing it. Students can also select a current event that has been taking place for some time (e.g., school busing controversy, civil rights issue, election campaign), project a likely ending for the event, and use this predicted outcome as the basis of their newscast. In this option, students can combine strict news narration with simulated "film clips" of the event being described.

When the newscasts are to be presented, you can invite other classes, teachers, school administrators, and local news media professionals to observe. You can also present the newscasts in an assembly for the whole school.

After the newscasts have been presented, students review their observation check lists and discuss the results, treating one or more of the following issues:

1. Was the news presented accurately?
2. Was there sex, political, religious, geographic, or ethnic bias shown? For example, did the newscasters make fun of small town or rural life?
3. What is propaganda? Were there any examples of propaganda in the newscasts?
4. What is "editorializing" and did it occur? For example, did any of the newscasters indicate they agreed or disagreed with something that was said or happened?
5. When issues were discussed in the newscasts, were all sides (not just the proverbial "both sides") presented?
6. What jobs were involved in producing the newscasts?
7. What are some of the emotional satisfactions of these jobs (for example, the excitement and sense of power talking to an audience; the opportunity to travel about interviewing people; the power of deciding what news items are broadcast)?
8. What skills are needed to perform these jobs?
9. What did the newscasts indicate about the historical event(s) they described which you did not know before?
10. Do you think that newscasts present the news accurately? Do you think historians present the past as it "really" happened? What are the difficulties in recording and presenting the "truth?"
11. What kinds of pressures operate on people in the news media – pressures for accuracy and of time, for example? How can time pressures interfere with accuracy? How can time pressures affect employees' job satisfaction and performance? Why do some people like and thrive on such pressure?

Useful Prior and Subsequent Activities:

- Students can develop and then add to their newscasts a "station editorial" about the event described. Other groups can act a "responsible opposing spokespersons" and present rebuttals during the "next night's" newscast.
- A copy of the newscast (in writing, audiotape, or videotape) can be sent to a local news station for evaluation.
- Students can observe real television news programs, fill out their observer check lists as they watch, and compare and discuss their results the following class.

Resources:

Society of Television Pioneers
P.O. Box 1475
Lubbock, Texas 79408

National Association of Broadcasting
485 Madison Avenue
New York, New York 10022

National Association of F.M. Broadcasters
420 Madison Avenue
New York, New York 10017

National Broadcasting Company (NBC)
30 Rockefeller Plaza
New York, New York 10020

Comments from Teachers and Students after Using this Activity:

OCCUPATIONAL FOCUS

- Secretary
- Bookkeeper
- Typist
- File Clerk
- Teller
- Stenographer
- Stock Broker
- Investment Counselor
- Banker

SOCIAL STUDIES RELEVANCE:

- Local Community Studies
- Citizenship

Activity #9

Subject Area:

Social Studies

MAKING SENSE OF DOLLARS AND CENTS

Capsule Activity Description:

Students interview and observe clerical and professional staff employed in the economic institutions in their community to explore office-related and finance occupations.

Teaching Prerequisites:

materials needed: none
contacts with community: tour and interviews in local economic institutions
approximate preparation time: ½ - 1 hour
approximate class time: 1½ - 4½ classes

Social Studies Objective:

to learn about the role of investment, savings, and loans in the operations of the economy;
to learn about the operations of financial institutions;
to study discrimination in the job market against women.

ACTIVITY

The purpose of this activity is to (1) examine the people who in some ways are the backbone of many large and powerful financial institutions, the office or clerical workers who staff and carry out the day to day transactions of the banking, insurance, stocks and bonds (investment), and finance and loan industries; and (2) to become familiar with the professional staff of investment counselors and financial analysts who influence the lives of many citizens.

The activity can be integrated into a local community studies or citizenship course whenever you deal with banking or issues of discrimination against women.

Activity #9

The activity has four major stages:

1. field trips to one or more financial institutions;
2. research on the jobs within the institution;
3. interviews with employees in the institution; and
4. discussion of findings.

The class breaks into small groups, as many groups as there are industries to investigate. Each group visits one or more financial institutions in the community. You or your students can make arrangements for these tours by contacting the personnel offices of the respective companies.

The purpose of the tours is to get an overview of what happens and a feel for the "atmosphere" in the industry. Before going, each group draws up a list of observations it plans to make, such as:

- the ratio of clerical to professional staff;
- the number of men in clerical positions and women in professional positions;
- the age of the clerical and professional staff;
- what the clerical and professional staff seem to be doing;
- what the attitude of the clerical and professional staff seem to be (happy? bored? interested? etc.);
- do the men and women socialize together or separately?

As part of the tour, each group makes sure it receives a list of the job titles of people employed in the firm.

In the second part of the activity, each group member chooses two job titles within the institution, one title belonging to clerical staff (e.g., bookkeeper, file clerk, typist) and a second title describing a professional occupation (e.g., stock broker, financial analyst, investment counselor). Using materials in the library, guidance office, and career information center, each student gathers information about the job titles, including job tasks, salary ranges, educational and training requirements, and how the job relates to the other occupations in that institution.

Having gathered this information, each student interviews two people who fit the job descriptions they have researched. If the institutions themselves (personnel offices) will not arrange for interviews, students can find out whether other students and school faculty have relatives or neighbors who either work at these jobs or know people who do.

Prior to conducting the interviews, each group develops an interview form listing the questions it wants to ask. Groups are told to develop questions on (1) the nature of the occupations, (2) on issues related to the subject matter under study (e.g., interest rates). Students can consider including the following topics for inclusion in their questionnaire:

- job title
- office or business location
- tasks performed
- hours or shifts
- salary range: starting, average, maximum
- fringe benefits
- opportunity for advancement

- education and/or training needed
- advantages of the job
- disadvantages of the job
- how they decided to enter the profession
- how they got the job
- whether there is discrimination against women
- why the clerical staff is mostly women and the professional staff mostly men
- whether the male/female ratio is changing in both the clerical and professional staffs
- whether men and women socialize together or separately on the job
- whether women who are professionals are treated differently from men, or men who are clerical staff are treated differently from the women
- questions about subject area issues, for example
  - Who determines interest rates? How do they decide what they should be?
  - Is there discrimination against women who come to these institutions as clients – e.g., seeking a loan or wanting to invest some money?

After conducting the interviews, each group develops a report of its findings by combining the answers to the questions each member asked. The reports discuss the three areas of (1) careers in the financial world, (2) discrimination against women (and men), and (3) subject area issues. Reports can be a written text or outlined for use in presentations. Each group presents its findings to the class, and all groups' findings are compared for inconsistencies and uniformities. Follow-up discussion can be held on one or more of the following issues:

- Is there discrimination against women? If so, what kind; e.g., not hiring them as professionals? not promoting them to professional status? treating women professionals already employed differently from men? paying women lower salaries for the same work or not allowing them to supervise men?
- Is the institution attempting to do anything about such discrimination if it exists?
- What do you feel the company should do about discrimination against women?
- Is there discrimination against men who apply for clerical positions or who are already employed in them?
- Why do many men and women feel women "have no head" for money, yet in many households it is the wife who manages the family finances? What are some other attitudes toward women that lead people to discriminate against them in the job market and induce women themselves to feel inadequate to perform successfully in certain jobs?
- To what extent do these institutions depend on their clerical staff for smooth functioning? Do any clerical staff end up doing part of the professionals' jobs?
- How do most people enter the financial world? How much background in mathematics is needed?
- What important decisions do executives in these institutions make that affect the economy and the lives of many citizens? Who decides, for example, whether to provide a loan and at what interest rate?
- What are the advantages and disadvantages to being on the clerical staff of a financial institution? Can this be a route to advancement to professional status?

Activity #9

Useful Prior and Subsequent Activities:

- Students can do further research into clerical jobs by interviewing clerical staff in other industries and businesses.

Resources:

Mr. Banker (board game), distributed by the Federal Reserve Board of Minneapolis

Everything a Woman Needs to Know to Get Paid What She's Worth, by Caroline Bird (Bantam, paperback)

National Association of Bank-women
111 East Wacker Drive
Chicago, Illinois 60601

Katherine Gibbs Secretarial School
200 Park Avenue
New York, New York 10017

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Police Officer
- Lawyer
- Prison Guard
- Probation Officer
- Judge
- Prosecutor

SOCIAL STUDIES RELEVANCE:

- Local Community Studies
- Citizenship

Activity #10

Subject Area:
Social Studies

COPS AND ROBBERS

***Capsule Activity Description:**

Students interview and observe people that operate the criminal justice system.

Teaching Prerequisites:

materials needed: none
contact with community: interviews and visits to police agencies, courts, and prisons
approximate preparation time: ½ - 1 hour
approximate class time: 1½ - 2 classes

Social Studies Objective:

to explore the criminal justice system;
to discuss some of the ethical and constitutional issues involved in controlling crime;
to study the causes of crime in particular and of deviant behavior in general.

ACTIVITY

The purpose of this activity is to explore one or more components of the criminal justice system. The focus is not on the defendant or prisoner but on the people that deal with him while he or she is in the system.

The main exercises in this activity are research and interviews. When possible, either field trips by the whole class on school time or by the small groups after school time can be incorporated.

*The core idea for this activity was developed by Patrick Weagraff. We are grateful for permission to use it. It is part of *Job Cluster Curricula for Public Service Occupations at the High School Level*, State Board for Vocational Education (Sacramento, California: 1973) which may be ordered at no cost from the State Board for Vocational Education, Sacramento, California 95814.

Activity #10

A study of the criminal justice system can easily and appropriately be integrated into social studies courses in a number of ways. For example, crime and law enforcement are salient issues in local community studies courses. Problems of ethics and law are treated at numerous points in citizenship courses.

Before engaging in the small group part of the activity, give students an overview of the criminal justice system. The chart provided on the following page can be duplicated and passed out to the class and then explained.

The class then breaks into small groups. Each group (1) picks a component of the criminal justice system it wants to research, (2) develops methods for conducting its research, (3) conducts its research, and (4) writes a report of its findings for presentation to the class and for role playing.

Groups can select from among four areas of criminal justice: law enforcement, prosecution, courts, or corrections. Within these areas, students can concentrate on crime in general or on particular types of crime and criminals, such as:

- juvenile delinquency
- white-collar crime
- so-called "victimless" crimes (drunkenness, prostitution, homosexuality, certain drug offenses)
- organized crime
- treatment of the poor or minorities in the criminal justice system
- shoplifting

What follows below are suggested methods for researching each of the four components of the criminal justice system and important career information and social studies subject area matter students can learn as a result of that research.

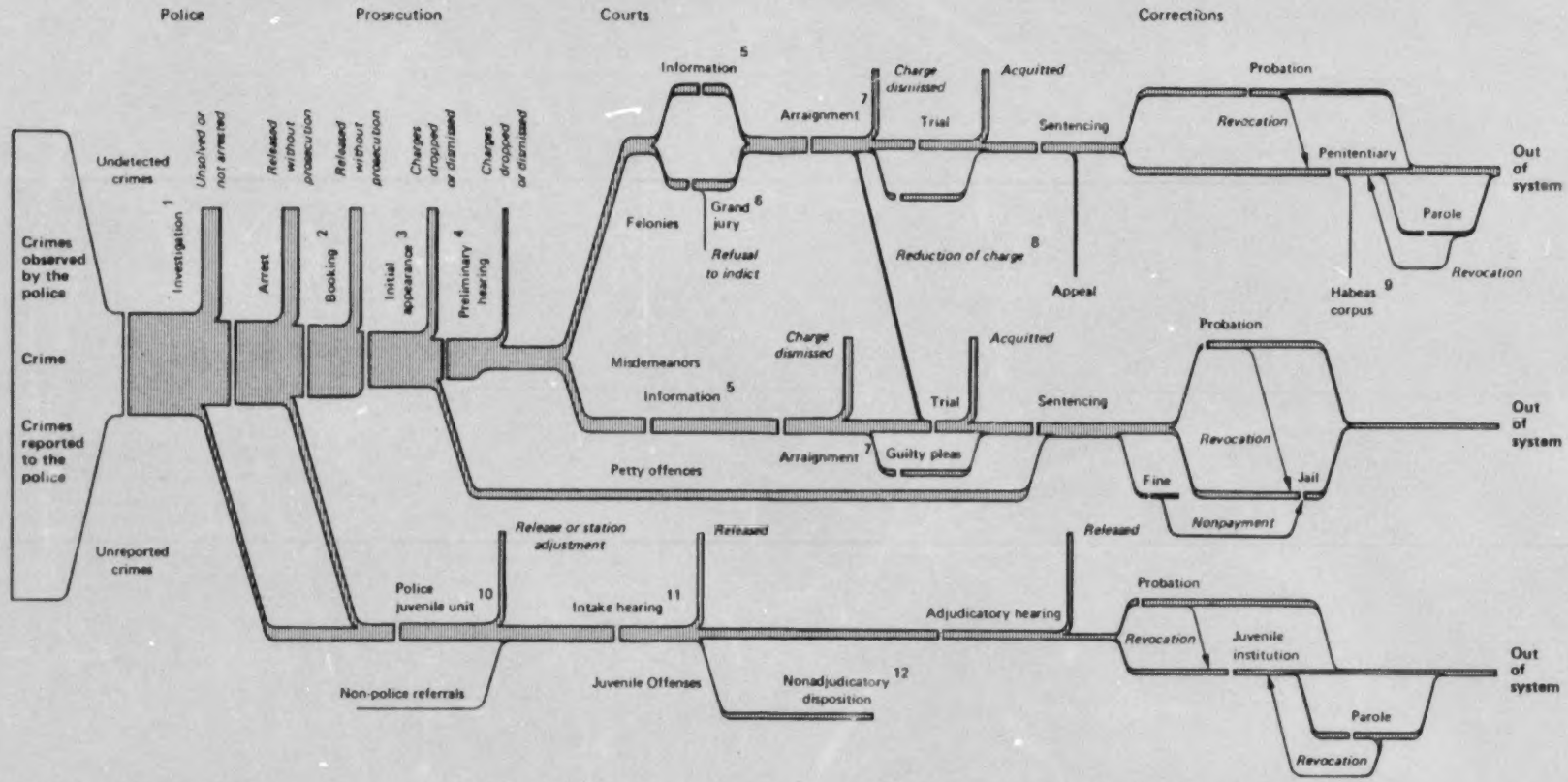
(a) **Law Enforcement.** Students can conduct research into law enforcement in a number of ways:

- Interview police officers. Arrangements can be formally arranged through the police department or students can conduct informal interviews with police who patrol their neighborhoods and school by simply explaining their project and inquiring whether they can ask a few questions.
- Ride in police cars. Some communities have "ride-along" programs for teen-agers (while others strictly forbid the practice). Students can inquire whether their department has such a program.
- Read about police work in the library. Some particularly good books on the police, all of which are in paperback, include:

  The New Centurions, by Joseph Wambaugh (Dell)

  City Police, by Jonathan Rubinstein (Ballantine)

  Behind the Shield: The Police in Urban Society, by Arthur Niederhoffer (Doubleday Anchor)
- Interview people who have been arrested or neighbors, relatives, and friends who have had occasion to make use of police services in any form.
- Ask the police department for any literature it dispenses to the public that describes police work.



1 May continue until trial.

2 Administrative record of arrest. First step at which temporary release on bail may be available.

3 Before magistrate, commissioner, or justice of peace. Formal notice of charge, advice of rights. Bail set. Summary trials for petty offenses usually conducted here without further processing.

4 Preliminary testing of evidence against defendant. Charge may be reduced. No separate preliminary hearing for misdemeanors in some systems.

5 Charge filed by prosecutor on basis of information submitted by police or citizens. Alternative to grand jury indictment; often used in felonies almost always in misdemeanors.

6 Reviews whether Government evidence sufficient to justify trial. Some States have no grand jury system; others seldom use it.

7 Appearance for plea; defendant elects trial by judge or jury (if available); counsel for indigent usually appointed here in felonies. Often not at all in other cases.

8 Charge may be reduced at any time prior to trial in return for plea of guilty or for other reasons.

9 Challenge on constitutional grounds to legality of detention. May be sought at any point in process.

10 Police often hold informal hearings, dismiss or adjust many cases without further processing.

11 Probation officer decides desirability of further court action.

12 Welfare agency, social services, counseling, medical care, etc. for cases where adjudicatory handling not needed.

- Observe police officers in action on the street as they direct traffic, ticket parked cars, or patrol a neighborhood on foot. Ask a police officer patrolling a neighborhood if he or she minds if you "tag along" just to observe.

In conducting their research, students can try to obtain answers to several of the following questions:

1. How does the average police officer spend most of his or her day? Directing traffic? Ticketing cars? Mediating family and neighborhood disputes? Patrolling the streets? Apprehending criminals? Filling out forms? Walking "the beat"? Testifying in court? Questioning witnesses?
2. What are the different jobs police officers have? What's the difference between a detective and a patrol officer, for example?
3. What training is required to become a police officer? How is a police officer trained?
4. How are the responsibilities of city, county, state, federal, and other special police departments divided? Why are there so many different types of police departments?
5. Are there women in the police department? If not, why not? If so, are they treated any differently from men?
6. What is the percentage of minority police officers in the department? If it is not the same as the proportion the minority represents in the local community, why is there a discrepancy?
7. Do police officers have a different personality from other citizens? Is there a "cop mentality"? For example, are they more conservative, suspicious, or cruel? If so, were they that way before they became officers or did the job change their personalities?
8. Why do people become police officers? Is it because of the power it gives them over people? the opportunity to help people? the potential for excitement? the ability to carry a gun? the security of the job?
9. What services do police perform for citizens besides enforcing the law and deterring crime (e.g., giving directions, passing out hunting licenses, etc.)?
10. What kind of corruption take place in police departments, what seems to be responsible for corruption when it occurs, and what can be done about it?
11. Under what circumstances can police make an arrest?

(b) **Prosecution:** Students can research careers as prosecutors in the following ways:

- Interview prosecutors. Arrangements can be made through a citizen who has acted as a witness for the prosecution or by making an appointment to see a prosecutor.
- Sit in on several trials. Most are open to the public, although in some courts minors must be accompanied by an adult.
- Interview people in the community who have been prosecuted for crimes if who these people are is common knowledge.
- Read about prosecutors in the library. Some of the best books about and by **defense lawyers** contain excellent descriptions of **prosecutors.** Some particularly good books on prosecutors, all of which are in paperback, are:

  The Prosecutor, by James Mills (Pocket)

  My Life in Court, by Louis Nizer (Pyramid)

  The Defense Never Rests, by F. Lee Bailey (Signet)

  Justice Denied, by Leonard Downie, Jr. (Penquin)

In conducting their research on prosecutors, students can try to obtain answers to several of the following questions:

1. What, actually, does a prosecutor do?
2. What other jobs are there associated with the prosecution of crime?
3. How does someone become a prosecutor? What qualifications are needed? Why do people remain prosecutors only for a short while?
4. What pressures are there on prosecutors to win cases and have a good "record" of convictions?
5. What is "plea bargaining" or "copping a plea" and why are they used so extensively? How does a prosecutor decide what to charge a defendant?
6. Why are jury trials so rare?
7. What is the difference between a civil and criminal case?
8. What techniques does a prosecutor use in questioning witnesses?
9. What are pre-trial diversion programs, how do they work, what are their advantages, and are they successful?
10. What is "white collar crime" or economic crime and why is it prosecuted so infrequently?

(c) **Courts.** Students can research careers as court officials in much the same manner as they can research the job of prosecutor. In addition, many of the same research questions can be asked. Other relevant questions are:

1. Who, besides judges, work in courts? What are the functions of court clerks and bailiffs?
2. How does a judge determine a sentence? How much latitude does he or she have in setting the sentence? Why is there such a variety of sentences given for the same crime?
3. What is bail and how does a judge decide whether to require it and, if required, how much it should be? What are bail bondsmen and what do they do?
4. How are judges able to preside over a court and at the same time campaign for re-election?
5. What are some of the more important constitutional issues that judges have to decide?
6. What is the court structure in the state: what is the difference between municipal, county, superior, district, supreme, etc., courts?
7. What is probation? What do probation officers do?

(d) **Corrections.** Students can conduct research into the correctional system in a number of ways.

- Arrange interviews with prison guards and other correctional staff by contacting the nearest prison administration office.
- Arrange a tour of a prison. Many prisons offer such tours for students who are accompanied by an adult. Students can enlist the services of a parent to act as chaperon.
- Read about prisons in the library. Some particularly good books describing prisons, all in paperback, include:

  Kind and Usual Punishment, by Jessica Mitford (Vintage)

  My Shadow Ran Fast, by Bill Sands (Signet)

  Birdman of Alcatraz, by Thomas E. Gaddis (Signet)
- Write for information to prison guard associations and request a complimentary copy of their journal or association newsletter.

Activity #10

In conducting their research on correctional systems, groups can ask the following questions:

1. What jobs are there in corrections in addition to that of prison guard? What do prison psychologists, social workers, and administrators do?
2. What do parole officers do?
3. What are the peculiar satisfactions and frustrations a job in corrections must provide? Are guards frequently fearful, for example? Does power ever "go to their head"?
4. Does it take a special personality or certain personality traits to be successful and/or happy as a prison guard, parole officer, or probation officer?
5. What power does a prison guard have? Do all guards carry weapons?
6. How frequent are prison riots? What seems to cause them? How are they handled?
7. Prisoners seem to be able to obtain weapons and drugs in many prisons. How are they able to do this?

After conducting their research, each group analyzes its findings and prepares a report to the class which discusses what careers in the criminal justice system component it studied are like and what specific criminal justice tasks its component is responsible for. Each group also prepares a brief role play of one or more of the activities its component engages in. For example, groups who researched law enforcement can role play a police officer giving testimony in court, arresting an alleged criminal, or mediating a family dispute. The "prosecution groups" can role play a prosecutor questioning a witness or plea bargaining with a defendant or a defendant's lawyer. The "court groups" can role play a judge setting bail or sentencing a guilty party. Finally, the "corrections" group can role play a prison guard coping with an angry inmate, a parole or probation officer confronting a parolee or probationer with having violated his or her parole or probation terms, or a probation officer recommending leniency or stringency to a judge about a particular criminal. In fact, the class could role play all the steps a person is likely to go through as he or she is processed through the criminal justice system. The previous chart can be used to facilitate this exercise, while one student plays the arrested/defendant/inmate/parolee and moves from group to group being "processed" through the system.

Useful Prior and Subsequent Activities:

- Students can invite prisoners' rights committees and the American Civil Liberties Union to class to comment on their reports and role plays.
- Students can invite to class any of the individuals they interviewed in the course of their research for a class discussion.
- Students can research the job of criminal defense layers.

Resources: Resources for specific topics and components of the criminal justice system are provided above in the text. Some general studies of crime and the criminal justice system, all of which are in paperback but are only second-hand accounts, follow:

Crime in America, by Ramsey Clark (Pocket Books)

The Challenge of Crime in a Free Society, by the President's Commission on Law Enforcement and and Administration of Justice (Avon)

Why Justice Fails, by Whitney North Seymour, Jr. (Morrow)

Our Criminal Society, by Edwin M. Schur (Spectrum)

Liberty under Law: Case studies of the Basic Principles of the Bill of Rights, American Education Publications, Education Center, Columbus, Ohio 43216

The Lawsuit, Xerox Corporation, American Education Publications, 55 High Street, Middletown, Conn. 06457

Justice in Urban America series, Houghton Mifflin, 110 Tremont Street, Boston, Mass. 02107

Comments From Teachers and Students After Using this Activity:

Section Two: ENGLISH

I. ACTIVITIES SUMMARY

This section of the manual contains the following ten activities, sequenced very generally from easiest to most difficult.

11.* **"WHAT'S MY LINE?":** Students familiarize themselves with career concepts and particular careers by playing the television game, "What's My Line?"

12. **THE NEWS ON SEX AND RACE:** Students evaluate advertising and television programs and their relationship to ethnic, age, sex, and geographic stereotyping.

13. **JOBS IN FACT AND FICTION:** Students prepare a reading list of literature relating to an interesting career and provide a report on the contents.

14. **ACT NOW TO PLAN YOUR CAREER:** Students perform a socio-drama and the class reacts.

15. **DRAMATIC JOBS:** Students research the jobs which are done backstage for a play and tour a theater that is preparing to put on a play.

16. **HIRING FOR JOBS IN MOTION:** Students choose a transportation mode, research career opportunities in that mode, and simulate a company personnel department "hiring" applicants to work in that business.

17. **ENGLISH ON THE JOB:** Students determine how English skills are used in different occupations by interviewing people in relevant careers and writing a character sketch.

18. **TEACHING AND LIKING IT:** Students read and discuss the personality traits and tasks of a teacher.

19. **PUBLISH OR PERISH:** Students by means of a tour and interviews become aware of job opportunities in the publishing industry.

20. **JOBS, ETHICS, AND LIFESTYLES:** Students role play conflicts arising from a career lifestyle.

*The activities in this section of the manual begin with number 11 because the numbering continues sequentially after the last activity (number 10) of the previous section of social studies activities.

2. INTRODUCTION

As an English teacher, you should consider career education as an integral and appropriate component of your teaching which will **increase your students' ability and motivation to learn English content and skills.** Moreover, an an English teacher, you are in an excellent position to integrate career education activities into your courses. English instructors teach courses which contain a variety of topics, instructional areas, and skills, including reading, writing, listening, speaking, communication styles (poetry, prose, drama), and analytic skills (interpretation, character analysis, literal comprehension, drawing conclusions, vocabulary, connotation and denotation, symbolism, etc.). As an English teacher, you also have considerable flexibility in terms of what you teach in your courses and how you teach it.

How will the integration of career education activities into your English courses help you achieve English objectives? There are at least three answers to this question.

1. While engaging in the career education activities provided in this manual, your students will learn a great deal about English **topics** related to the career or occupation they are studying. For example, if a group of students visits backstage of a theatre and talks with the actors and actresses, stagehands, choreographer, set designer, and other theatre personnel, the students will learn much about how plays are written (e.g., stage directions) and about drama as a form of communication. In short, learning about careers in English fields automatically involves learning about English **subject matter.**
2. Many of the **skills** in the English curricula will be developed or reinforced through the use of career education activities, including such English skills as reading, writing, speaking, and interpretation skills.
3. By including career education activities in your courses you will increase your students' **motivation** to study and learn about English topics and develop related skills. By studying careers related to English in exciting, action-oriented ways, students will be stimulated to delve further into the field related to the occupations they are investigating. For example, students who take a field trip backstage to a theatre are likely to want to read more plays and more about theatre production. In this manner, career topics have the attractiveness of **"relevance"** for studying and learning English content matter and skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected, as well as involved student who wants to know what English has to do with the world of an adult: "Can studying the parts of speech get me a job?" is the unspoken query of many students today.

How can integration of career education with English operate in practice? Let's look briefly at a hypothetical Sample Week's Lesson Plans to see how you can integrate career education activities into your English courses.

3. SAMPLE WEEK'S LESSON PLANS

The hypothetical but typical week's lesson plans on the following page are "being used" in an English course that is in its second term. The lesson plans presume that your students have already begun reading a play and that they will complete the reading assignment just before the first class of this week's lessons begins.

You have now reached the point in your unit on the play when you are ready to discuss drama as literature – the nature of dialogue, monologue, plot, characterization, verse plays and expository plays, etc. You have chosen to integrate a career education activity on occupations in the theatre (Activity #15) into the third and fifth periods during this hypothetical week's lesson plans. You have integrated the activity in such a way that it not only will help your students become familiar with the variety and nature of jobs related to the theatre and thereby achieve **a career education objective,** but it will also help your students learn about the nature of drama as literature , **an English objective.**

When you use one of the English career education activities in your class, you will want to adapt it a little or considerably as needed, to fit in appropriately with your English lesson plans, with your students' particular needs, and with the access your students have to relevant people to interview and observe. For example, in using Activity #15, you may not be able to have your students interview actors, producers, or stage hands or observe an actual stage production if you are located in a rural area of if no play happens to be in production at the time you implement the activity. In that case, you can adapt the activity so that students can interview drama students at the high school or use library resources.

But however you adapt this and the activities to fit your English lesson plans and students' needs, the essential goal should not be lost: to help your students become aware of job possibilities and what compensations, skills, and tasks different occupations require and involve.

SAMPLE WEEK'S LESSON PLANS

(An illustration of one way to integrate a career education activity into your course.)

HOMEWORK ASSIGNMENT	DESCRIPTION OF CLASS ACTIVITY
Students read (or complete reading) assigned play.	• Class discusses components of a play-verse vs. expository style, characterization, plot, dialogue, monologues, • Class uses play read as homework for illustrations of style, plot, etc.
Students compose a list of all the occupations or jobs they think are related to producing the play they read.	• Class discusses the elements involved in producing a play, such as staging, costumes, lighting, props, producing, directing, acting, selling tickets, advertising, and rehearsing. • Discussion relates these production elements to the play students read and to homework assignment.
Student refine list from previous day's homework to include new jobs discussed in second class period.	• Class discusses each of the jobs related to producing a play. (Activity #15) • Class breaks into small groups, each group responsible for researching one or more jobs. Each group identifies, with teacher's help, what research methods it will use and who will be responsible for what research tasks.
Students begin research, such as library research and interviews with drama teachers, visit to stage production, talks with senior high drama club students, or interview with ticket agent.	• Member(s) of high school drama club or of local theatre troupe visits class to discuss: a. plays as literature b. jobs related to producing a play
Students complete research and prepare report to class of results.	• Groups report results of research to class. • Class pretends it is the "producer" of the play it read earlier and identifies the people it will want to hire, and how many of them, to stage the production.

4. CROSS REFERENCE

The cross reference below identifies by number activities which treat particular occupational issues and jobs (listed across the top of the page) and activities which reinforce specific English topics and skills (listed down the left-hand margin of the page). By using the reference, you can locate activities by specific jobs or occupational issues which you may want to teach or by particular English topics and skills which you feel are relevant points in your curriculum at which to introduce a study of careers.

CROSS REFERENCE

TOPIC OR SKILL / OCCUPATIONAL FOCUS	Actor	Advertiser	All Careers	Career Planning	Transportation Careers	Editor	Investment Broker	Journalist	Law	Media Professions	Occupational Stereotyping	Publisher	Repair Person	Reporter	Retail Business Manager	Salesperson	Secretary	Social Worker	Teacher	Theatre Occupations	Typesetter
Bibliographical Skills			13																		
Cataloguing			13																		
Characterization																		18			
Communication Skills		12	20	14			20			12				14	20	14		20	12		
Drama/Plays	15		20	14			20							14	20	14		20	15		
Editing		17 19				19		17 19	17	17		17 19	17	19				17	17	17	19
Interpretation		12 17						17	17	17	12	17	17					17	17 18	12 17	
Journalism		19				19		19				19		19							19
Letter Writing					16																
Notetaking		17						17	17	17		17	17					17	17	17	
Paragraph Formation					16																
Précis Writing			13																		
Public Speaking		17		14				17	17	17		17	17		14		14	17	17	17	
Questioning		17	11 20		16		20	17	17	17		17	17			20		17	17 20	17	
Reading		17 19	13			19		17 19	17	17		17 19	17	19				17	17 18	17	19
Researching			11																		
Skimming			13																		
Verbal Communication Skills		17			16			17	17	17		17	17					17	17	17	
Writing		12 17	13		16	19		17 19	17	17	12	17 19	17	19				17	17	12 17	19
		19																			

OCCUPATIONAL FOCUS:

- All Careers

ENGLISH RELEVANCE:

- Questioning
- Researching

Activity #11

Subject Area:

English

"WHAT'S MY LINE?"

***Capsule Activity Description**

Students familiarize themselves with career concepts and particular careers by playing the television game, "What's My Line?"

Teaching Prerequisites:

materials needed: scoring posters for the bulletin board
contacts with community: none
approximate teacher preparation time: ½ - 1 hour
approximate class time: 1 - 3 classes.

English Objective:

to practice identifying appropriate questions and stating them clearly; to practice research skills.

ACTIVITY

The purpose of this activity is to develop awareness of various careers by playing the television game, "What's My Line?". The career awareness can include job requirements, working conditions, salary, and job satisfaction.

You can integrate the activity into your English class whenever you want students to practice developing research skill, and particularly when you want them to research a topic on their own with minimal

*This activity has been revised from an activity developed by Counselors at Pleasant Grove Junior High School under leadership of the Career Guidance Specialist, Office of Utah State Board of Education. We are grateful for permission to use it. The original activity is part of *Junior High Career Guidance Curriculum – Student Workbook*, Utah State Board of Education (Salt Lake City, Utah: 1972). It is presently out of print.

assistance from you -- that is, where their assignment requires them to decide where to obtain the information they need. In addition, you can use the activity when you take up the communication skill of effective questioning, since the only way to win the game is for players to formulate and verbalize clear, highly specific questions.

Before playing the game, each student **secretly** chooses five jobs and used the library, career information center, interviews with people performing the job, and other sources of knowledge available to them to develop brief job profiles. You can identify the information students must include in the profiles, or the class itself can agree on what should be included. Sample job profile ingredients are:

- job title
- tasks performed
- salary
- job satisfactions and dissatisfactions
- skills and information needed
- why people choose the job
- how society regards the job

Having researched five careers or jobs, each student must record the information learned on a Role Profile Sheet for use by the Game Moderator during the game.

Describe the basic features of the game to the class before they do their research so they are motivated to do it well and understand the purpose for which they are doing it. In very simple terms the object of the game is for a panel of students to guess the job a "contestant" has chosen for him- or herself by asking only questions which the contestant can answer with a "Yes," "No," "Maybe," or "Sometimes" answer.

The panel has a rotating membership of three to five players, with one member changed every round. Rotate the membership alphabetically, dropping the person whose name is closest to the beginning of the alphabet and adding the student whose name is next in alphabetical order.

Scoring can be at your or your students' discretion. Establish a scoring system at the beginning of the game. One possibility is to give **each** member of the panel five points whenever **any** panel member guesses the correct answer (that is, the correct job). Every time a contestant stumps a panel, give him or her twenty points.

You or your students develop a chart on which to record the progress of different rounds of the game. Use the chart to keep a record of which students were contestants and panelists, what jobs were used, and each student's personal point score. A sample form follows.

Student	Contestant		Panelist			Job #1	Job #2	Points
J. Abbott	X	X	X			nurse		20,5
P. Boyajian	X	X				farmer	soldier	20,0
C. Cohen			X	X	X			5,5,5
L. Doucette	X		X	X		teacher		0,5,5
T. Emerine			X	X				5, 5

Although you can play the game at odd times when only a few minutes are available, such as at the end of a period or during a study hall, keep enough time left over at the end of each round of the game to

discuss the occupation treated and the English skills used. Discussion can focus not only of reviewing what was revealed about the job and about other aspects of the job in the contestant's role profile which were **not** revealed during the game, but also on why the panel may have had an easy or difficult time guessing the occupation. Was it because they asked the wrong questions? What constitutes a "good" question? How does one formulate a "good" question? Were any questions phrased unclearly so that the contestant did not understand them? How could they have been phrased better? Also discuss whether there were any examples of sex stereotyping in any of the questions or responses.

Specific player instructions follow.

- **Panel Moderator.** Although you may want to fill this role, students can volunteer for it or be assigned to it, also.

  The Panel Moderator:

  1. validates that the questions are of the "Yes," "No," "Maybe," or "Sometimes" variety;
  2. verifies that the contestant's answers are correct;
  3. keeps track of the number of questions asked and warns the panel and contestant when they have reached fifteen questions;
  4. keeps official score on the chart;
  5. keeps the panel moving quickly. (You and the class can establish a time limit within which the panelists must ask a question. If you do, appoint one student as clock watcher.)

- **Contestant.** The student who plays the contestant selects one of his or her five job profiles, making sure it is a job that has not already been used in a prior game round. (To repeat a job once several rounds have been played can be acceptable.) The contestant then:

  1. gives a copy of the job profile to the Panel Moderator;
  2. answers panel members' questions only with a "Yes," "No," "Maybe," or "Sometimes" answer. If the contestant does not know the answer, an "I don't know" response is required. However, **whenever a contestant answers a question with "I don't know," the panel receives two bonus questions.**

- **Panel Members.** There are three to five panel members. For each new round of play, one panel member "resigns" his or her position and one other student fills the vacancy. Panel members:

  1. take turns asking questions of the contestant;
  2. ask only questions which the contestant can answer with a "No," "Yes," "Maybe," or "Sometimes" answer;
  3. may ask a total of twenty questions. However, each time the contestant answers "I don't know" to a question, and the Panel Moderator agrees that the question is a legitimate one, the panel is awarded a bonus of two extra questions.
  4. If a panel member tries to guess the contestant's **specific job,** (e.g., dentist, welder, farmer, etc.) and guesses incorrectly, the panel member is out of the game and does not collect any points even if another panel member eventually guesses the occupation correctly. (This rule rewards intelligent guessing and penalizes random guesses.)
  5. If a panel member cannot think of a question within the specified amount of time, it is counted as a question nonetheless. This puts a premium on panelists thinking ahead about what questions they want to ask so they are ready when their turn comes.

Activity #11

A sample of some dialogue for one round of play follows.

"Do you work more indoors than outdoors?"	"Yes"
"Do you work only indoors?"	"Yes"
"Does your work involve mostly writing?"	"No"
"Is your work creative?"	"No"
"Are you a man?"	"Sometimes"
"Are most people in your job men?"	"No"
"Does your work require a high school diploma?"	"Yes"
"Are you a secretary?"	"No! You guessed wrong so you're out of the game."
"Would you earn less than $10,000 a year as a starting salary?"	"I don't know"
"OK, we get two extra questions. Does your work have anything to do with medicine?"	"Yes"
"Are you a nurse?"	"Yes! You guessed it in 11 questions, not counting the two bonus questions you could have used."

Resources:

Occupational Information, R. Hoppock, McGraw-Hill, 330 West 42nd Street, New York, New York.

Encyclopedia of Careers and Vocational Guidance, Vols. I and II, William E. Hupke, Doubleday, Garden City, New York 11530

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Occupational Stereotyping
- Advertising Representative
- Advertising Writer
- Television Programmer

ENGLISH RELEVANCE:

- Communication Skills
- Interpretation
- Writing

Activity #12

Subject Area:
English

THE NEWS ON SEX AND RACE

***Capsule Activity Description:**

Students evaluate advertising and television programs and their relationship to ethnic, age, sex, and geographic stereotyping.

Teaching Prerequisites:

materials needed: back issues of different magazines
contacts with community: none
approximate preparation time: ½ - 1 hour
approximate class time: ½ - 4 classes

English Objectives

to practice interpretation and verbal communication skills; to practice expository and narrative writing.

ACTIVITY

This activity involves a study of how advertising and television programs exhibit occupational stereotyping and an examination of two powerful forms of verbal and visual communication. The activity has two options. You can use either one or both. Option One is a study of advertising in magazines and on television; Option Two is devoted to examining television programs.

You can integrate the activity into your English course whenever you study advertising as a form of communication, treat the issue of stereotyping, or discuss visual communication and interpretation

*This activity has been revised from an activity developed by the Counselors of Howard County, Maryland. We are grateful for permission to use it. The original activity is part of *Career Education Resource Guide, Grades 6-8. It's Time to Plan*, The Howard County Public School System (8045 Route 32, Columbia, Maryland 21044: 1971).

skills. In addition, the activity involves writing, both expository and narrative, and can therefore be used to motivate students to practice writing skills.

Begin the activity by explaining the concept of stereotyping. Basically, the concept involves **generalizing** about a group of people and assuming **everyone** in that group conforms to the generalization. For example, most homemakers are women. Many people therefore assume that **all** homemakers are women. As a result, when we meet "the man of the house" we assume that he is not the homemaker.

Use examples from magazine and television advertising to illustrate the concept – advertisements with men selling cars and beer or women purchasing detergent. An example of stereotyping in television programming is including a black as one of the police officers, but rarely or never as a police seargent, detective, or supervisor. After explaining the concept of stereotyping, discuss the ways in which **occupational** stereotyping can occur, including racial, sex, geographic, religious and economic stereotyping.

You can now select one or both of the options described below for study.

Option One. In this option, students study occupational stereotyping in magazine and television advertising and analyze advertising as a form of communication. Begin by dividing the class into small groups which have a mixture of both sexes and all ethnic backgrounds. Although each group can study all kinds of occupational stereotyping in jobs, each can also be assigned to concentrate on finding examples only of **specific types** of occupational stereotyping, such as sex, ethnic, and age. One group can also look for examples of advertising which do **not** stereotype at all. Assign each small group, as homework, to cut pictures out of magazines that illustrate occupational stereotyping. If students do not have magazines readily available at home, provide copies yourself.

When the groups have gathered their advertisements, each group discusses their findings in the following terms and takes notes on their conclusions:

1. What kind of occupational stereotyping did you find? Sex? Race? Age? Religious? Geographic? Class?
2. Why are these examples of stereotyping?
3. How could you change each advertisement so that it did not stereotype?

Follow-up class discussion can summarize and compare the groups' conclusions and move on to:

- discuss why advertisers stereotype and whether they do so deliberately or unthinkingly;
- think of examples of occupational stereotyping in recent literature it has read in English class and discuss why the authors may have stereotyped their characters;
- discuss how occupational stereotyping can discourage members of the groups against whom the stereotypes generalize from seeking employment in certain fields and how stereotyping about jobs confirms the discriminatory behavior of employers against certain groups.
- draw an advertisement for one of the products illustrated in an advertisement that was brought to class and illustrate how the advertisement could be presented so as to avoid occupational (or any other) stereotyping;
- discuss whether developing advertisements can involve being creative and be fun and whether a career in advertising would be rewarding;
- discuss how they would feel as advertisers promoting a product using deceptive advertising techniques or a product in which they didn't believe;

- discuss whether advertising personnel may "take it personally" if a product they promote doesn't sell and what pressures may be on them to succeed;
- discuss what skills are needed to be a successful advertiser;
- discuss what methods exist by which to communicate effectively an idea.

This option can be extended if students study advertisements on television. Students can divide into small groups again and spend several evenings or weekends identifying examples of occupational stereotyping in television advertisements and compare their findings in class.

Option Two: In this option, the class again breaks into small groups, but each group researches a different type of occupational stereotyping illustrated in television **programs,** not advertising. Programs can include "soap operas," detective and police stories, situation comedies, and news broadcasts. Students then engage in essentially the same exercises as in Option One, except that they:

- write down the examples of occupational stereotyping they view and bring their reports to class, rather than cut out magazine advertisements;
- can also observe the programs not only for instances of occupational stereotyping, but to see what kinds of jobs are shown and not shown, and whether occupational stereotyping seems to be concentrated in particular against certain occupations or job tasks;
- formulate how the programs they viewed could be presented without any stereotyping.

Useful Prior and Subsequent Activities:

- If students engage in both options, groups can determine whether occupational stereotyping in magazine and television advertising is similar to stereotyping occurring on television programs.
- Students can write advertising agencies and television stations inquiring why they portray what students feel to be occupational stereotyping.
- Students can invite advertisers to class to discuss advertising as a career and the communication skills needed to be a successful advertiser.

Resources: Vance Packard's **The Hidden Persuaders** (Pocket Books) is a standard and readable popular treatment of advertising; a view from "the inside" can be obtained from **Confessions of an Advertising Man,** by David Ogilvy (Ballantine).

American Association of Advertising Agencies
200 Park Avenue
New York, New York 10017

J. Walter Thompson Co. (Advertising Agency)
420 Lexington Avenue
New York, New York 10017

National Broadcasting Company, Inc.
30 Rockefeller Plaza
New York, New York 10020

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- All Occupations

ENGLISH RELEVANCE:

- Bibliographical Skills
- Cataloguing
- Reading
- Writing
- Préci Writing
- Skimming

Activity #13

Subject Area:
English

JOBS IN FACT AND FICTION

Capsule Activity Description:

Students prepare a reading list of literature relating to an interesting career and provide a report on the contents.

Teaching Prerequisites:

materials needed: none
contacts with community: none
approximate preparation time: ½ - 1 hour
approximate class time: 1 - 3 classes

English Objectives

To develop research skills in the area of developing bibliographics; to practice reading skills; to learn to write a precis.

ACTIVITY

The purpose of this activity is to develop and review written materials which raise occupational or career issues and describe accurately different jobs. The tasks include developing a list of items, reading or skimming them, recording basic bibliographic information about them, writing a précis describing each item, and "publishing" the results as a guide for other students.

There are numerous occasions on which you can usefully integrate the activity into your English course. You can use the activity any time you want students to gain realistic and meaningful practice in developing a reading list, recording basic bibliographic data, writing precis, and skimming.

Students begin the activity by selecting a career area which interests them (e.g., transportation, medicine, construction, farming); students who select the same occupational area can conduct the exer-

cise together. Students (and/or groups) then use library reference materials or brainstorm to develop a list of specific job titles within the occupational area they have chosen (e.g., trucker, nurse, brick layer, crop sprayer). Students then search the school and other local libraries for books and pamphlets which describe people performing the jobs or raise issues related to the jobs. Students do not collect literature that is explicitly career education literature, but rather concentrate on locating biographies, autobiographies, poems, plays, short stories, and novels which treat the jobs they have selected. In addition to using libraries, students can also talk with people employed in these occupations to ask if they are familiar with appropriate books related to their jobs.

If students find an abundance of items that treat their chosen jobs, they select from among the books those that seem most appropriate and interesting. You and they can agree on minimum and maximum number to retain.

Having selected appropriate literature, students record basic bibliographic information on each according to the bibliographic methodology you teach.

Students then select one or more of the items they have included in their bibliographies to read or skim for the purpose of writing a précis of the book's contents and relevance to career education. Once again, you decide with your students how many books (or poems, short stories, etc.) they must read and/or skim and write précis on. You can vary the number of items to be read from student to student, depending on their reading ability and the difficulty and length of the literature each pupil has listed in his or her bibliography. Information students can describe in their precis can include the following:

- occupation treated
- whether career issues are a major focus in the item
- specific occupational informaton provided – e.g.,
  - tasks involved in it
  - skills needed to be successful at it
  - information or knowledge needed to be successful at it
  - discriminatory behavior practiced in it
  - why people enter it
  - what types of people enter it
  - fringe benefits and salary ranges it provides
  - satisfactions it provides
  - negative aspects of the work
  - how it affects the employee's personality
- whether the item is difficult or easy to read
- whether the item was interesting to read

After writing their précis, students review their bibliographies and précis with you and with other students, revise them, and place them in manila folders for use by other students in the school. You can also duplicate copies of the materials and keep them on file in the school library, after announcing their availability in the school newspaper or daily school bulletin.

When the activity is complete (or at critical stages of its progress), class discussions can be held on the nature of developing bibliographies, skimming, speed reading, and writing a précis. In addition, the specific occupational information learned by each student can be shared with other members of the class either by assigning students to read each other's reports or having selected students give oral

presentations to the class on what they learned. In particular, students can focus on **why** people take certain jobs – what they think they will like about them, including concern not only about the type of work involved and the salary, but also concerns about having job security, following in a parent's or role model's footsteps, being "desparate" for a job and taking the first opening available, having evenings and weekends free, avoiding or desiring a job that requires responsibility or initiative, or finding a job which offers the opportunity to exercise authority, leadership, or creativity.

Resources: Examples of novels, poems, and short stories students can include in their reading list follow.

Novels and Short Stories

The Assistant – Bernard Malamud – grocery store owner
The Last Hurrah – Edwin O'Connor – professional politics
"The Egg" – Sherwood Anderson – chicken farm and small restaurant owner
"The Patented Gate and the Mean Hamburger" – Robert Penn Warren – running a diner
"Flowers for Algernon" – Daniel Keyes – medical professionals
"The Secret Life of Walter Mitty" – James Thurber – you name it
The Taking of Pelham One, Two, Three – John Godey – transportation management
The Old Man and the Sea – Ernest Hemingway – fisherman
Appointment in Samara – John O'Hara – business executive
Up the Down Staircase – Bel Kaufman – teacher
To Sir With Love – E.R. Braithwaite – teacher
I Never Promised You a Rose Garden – Hannah Green – psychiatrist
Johnny Got His Gun – Dalton Trumbo – V.A. Hospital staff
The New Centurions – Wambaugh – police officers
Catch 22 – Joseph Heller – military life

Poems

"Night Shift" – Sylvia Plath – factory workers
"What is He?" – D.H. Lawrence – cabinet maker; craftsperson
"Buyers and Sellers" – Carl Sandburg – laborers (generally)
"My Bus Conductor" – Roger McGough
"A politician is an arse upon" – e. e. cummings
"Lines Written for Gene Kelly to Dance to" – Carl Sandburg
"Jazz Fantasia" – Carl Sandburg – jazz musician

Comments from Teacher and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Retail Business Manager
- Secretary
- Career Planning

ENGLISH RELEVANCE:

- Communication Skills
- Public Speaking
- Drama (plays)

Activity #14

Subject Area:

English

ACT NOW TO PLAN YOUR CAREER

***Capsule Activity Description:**

Students perform a socio-drama and the class reacts.

Teaching Prerequisites:

materials needed: five copies of the script
contact with community: none
approximate preparation time: ½ - 1 hour
approximate class time: 1½ - 2½ classes

English Objectives:

to practice speaking in front of a group; to practice communicating effectively; to gain insight into the way plays are acted.

ACTIVITY

In this activity, students learn about careers by engaging in a brief socio-drama centered around the issue of career planning. In addition, the activity requires students to practice several English skills, including oral communication, editing, and public speaking. You can use the activity whenever you are teaching one of these English skills. In addition, you can also integrate the activity into a unit on drama, since the socio-drama illustrates many of the features of stage acting, including declaiming, emoting, and ad-libbing.

*This activity has been revised from an activity developed by L. Vetter and B. Sethney. The original activity is part of *Planning Ahead for the World of Work*, Ohio State University, Center for Vocational Education (Columbus, Ohio: 1971).

Activity #14

Assign the parts of the drama the day before in class, so that the actors can become familiar with their parts. Encourage the actors to make additions or revisions in their parts. During the class presentation, each actor wears a name card around the neck to enable the rest of the class to identify each character.

CAST:

Janet – planning to go to business school after high school graduation

Sara – following vocational course in high school will work full-time after graduation

Margie – planning to go to a four-year liberal arts college after graduating from high school

Diana – will look for a job after high school graduation (no special vocational training)

Elaine – dropping out before high school graduation to get married

SCENE: Girls getting together for a coke after school.

CONVERSATION:

Diana: That English test was harder than I expected. Never have been able to guess what Mrs. Mills might include on one of her tests. Margie, you always get A's in English. Did you think the test was hard?

Margie: Sure it was, but Mrs. Mills is always fair in the questions she asks. Don't you remember reviewing the questions in class?

Janet: You know, English is such an important subject and Mrs. Mills makes it so interesting – I really don't mind putting in the time and effort. In fact, what I'm learning this year is really going to be a help to me next year in business school, stuff like grammar and letter writing.

Elaine: What do you mean – helpful? I'm so tired of all this Chaucer mess. If we only did something even slightly practical once in a while. When Bill and I get married in December I plan to quit school and find a job so that at last I'll be doing something worthwhile.

Sara: What kind of a job will you be able to get, Elaine, without a high school diploma?

Elaine: I've had a year of typing so I certainly won't have any trouble getting hired as a secretary. Lots of girls graduate from high school with less than that.

Janet: Yes, perhaps some haven't had typing, but it would be the diploma that I'd be concerned about. I understand a high school diploma is a necessity these days if you hope to find a job you'll really be happy in. I've had typing and a year of shorthand but I want to increase my chances for a really special secretarial job. You won't catch me filing in some office from 9-5. I'm going to take the business school's high skill shorthand course and a year from now I'll be qualified to apply for top-notch positions.

Sara: Your plan sounds good, Janet. I'm glad I enrolled in distributive education this past year because I now have enough work experience to know the type of job I'd like to do. You will be going to business school after you graduate – I'm getting my training right here at good ol' City High. By the time I graduate, I'll have a pretty good idea about some parts of the variety store business and general ideas about the total operation of the store. I've learned a lot about the merchandise through stock work and even get to help with some of the candy department ordering. I plan to continue

working at the same variety store after graduation and am really looking forward to beginning training on the cash register – we're starting that in class next week.

Diana: Sounds like you two have really been planning ahead. I just don't know what kind of job I might be interested in after graduation.

Elaine: Why worry, Diana? You'll probably be getting married before long, so any kind of job will do in the meantime.

Margie: You don't really mean that, do you Elaine? Forty hours a week is a terribly long time to do something you're not interested in. Besides that, you've already said you plan to work after you and Bill marry. Diana may get married but she will also probably work a year or even years afterwards.

Diana: Gee, Margie, you'll have an extra four years to put off making a decision. Bet you'll have fun while you're in school down at State U.

Margie: Sure, I'll have fun, but I'm not going to put off deciding what I want to do for four years. I'll have to take courses that will apply to whatever area I decide to major in and to decide what to major in I'll sort of have to know what I want to do after college. Right now, I think teaching first grade would be the greatest – all those cute kids.

Janet: Thought you wanted to be some sort of lab technician.

Margie: Oh, Janet, you're thinking about **last** week.

After the performance, students break into small groups to discuss one or more of the following issues:

1. What is each character's general attitude toward the future?
2. What is each character's attitude toward preparing for employment in the future?
3. What are some jobs Elaine will be able to get if she drops out of high school?
4. Are there ways in which dropping out of high school can be beneficial? Is it possible to take a "leave of absence" from high school and return at a later date? What are some of the advantages and disadvantages of doing this?
5. Has any of these characters planned well for her future? What are good ways to plan for a career? What are bad ways?
6. What things, if any, do you learn in English that will be helpful no matter what occupation you choose? Which of these things could also be learned outside of school? Are there English skills which are learned better outside of school?
7. What English skills were used in the socio-drama? How well were they used? Which skills used in the socio-drama are used by professional actors and actresses?
8. Was there anything in the socio-drama that relates to problems women may have choosing a career? Would the socio-drama have been different if the parts were for boys? Are there ways in which boys and girls should plan differently for a career? Are there examples of sex stereotyping in the dialogue of the socio-drama?

Groups present their conclusions to the class and the other students and you comment on them.

Useful Prior and Subsequent Activities

- Students can write their own socio-drama in small groups and present them to the class. The dramas can revolve around specific occupations or around general career issues which cut across occupations (e.g., second careers, sex, age, or ethnic discrimination).

Activity #14

- Students can invite a group of women to class for a panel discussion on discrimination against women in the job market and dilemmas women may experience between "staying at home" and "raising a family" vs. becoming employed. The women can include employed women and "housewives", part-time and full-time employed women, and professional and non-professional working women. During the following class, students can evaluate the panel's speaking styles and ability to communicate clearly as part of the English component of the exercise.

Resources:

Two major paperback novels about business are **An American Tragedy,** by Theodore Dreiser and **Appointment in Samara,** by John O'Hara.

Films:

"The Big Question, Choosing Your Career," Association Films, Modern Talking Picture Service, Dallas, Texas.

"Choosing Your Occupation," Coronet Films, Coronet Building, Chicago, Illinois 60601

Filmstrips: Guidance Associates, Pleasantville, New York 10570

"I Never Looked at It That Way Before," Parts 1 and 2

"Preparing for the Jobs of the 70's," Parts 1 and 2

"Preparing for the World of Work," Parts 1 and 2.

OCCUPATIONAL FOCUS:

- Actor
- Director
- Theatre Manager
- Lighting Designer

ENGLISH RELEVANCE:

- Drama

Activity #15

Subject Area:
English

DRAMATIC JOBS

Capsule Activity Description

Students research the jobs which are done backstage for a play and tour a theatre that is preparing to put on a play.

Teaching Prerequisites:

materials needed: none
contacts with community: field trip to a theatre
approximate teacher preparation time: ½ - 1 hour
approximate class time: 3 - 4 classes

English Objectives:

to investigate the tasks necessary to produce a play; to understand the elements involved in playwriting and the production of plays; to understand the purpose and nature of a playwriter's stage and acting directions.

ACTIVITY

This activity is designed to familiarize students with the backstage tasks involved in the production of a play both to indicate the types of jobs available in theatre and to provide insight into how dramatists write plays.

The activity can be integrated into an English course whenever you study a play or discuss drama in general.

The activity has three parts: students (1) brainstorm what they suspect are the backstage operations involved in the production of a play; (2) visit backstage during the production of a play; and (3) discuss their tour in relation to a play they have just read or are currently studying. If it is not feasible

for students to tour a theatre, production staff of a local play can be invited to class to explain their jobs.

- **Brainstorm.** Using information (e.g., stage directions, lighting instructions, acting instructions, make-up descriptions, list of props) from a play they are currently reading or have just completed, students develop a list of jobs they think are required in order to stage a play. You can supplement their list with such jobs as director, props person, set construction staff, ticket agent, usher, advertising staff, wardrobe person, set designer, choreographer, prompter, curtain puller, stage hand, make-up artist, musician, special effects person, stage manager and assistant manager.

  Based on this list, students break into small groups to compile a list of questions to pose to one or two of the people who hold these jobs. The questions revolve around both what the jobs are like and also how they relate to the overall task of producing a play. Sample questions follow.

  1. What is your official title?
  2. What are your major responsibilities?
  3. Is there a lot of pressure to get things done on time for the next show or next act?
  4. Do you find it exciting or interesting to be around (famous) actors and actresses? Do you find that some of them fit the stereotype of being "temperamental"?
  5. What skills do you need to perform your tasks and where and how did you learn them?
  6. How do you find out exactly what you have to do for a particular play? Do you find instructions in the text of the play or does the director tell you?
  7. How much opportunity is there for you to exercise creativity or initiative in what you do? Do you have to "stick to" exactly what the playwright wrote or the director instructs you to do?
  8. How much does a dramatist need to know about your job to be able to write a successful play?
  9. How important is your job to the successful production of a play?
  10. Do some people still feel that theatre work is somehow "disreputable"? Did your family or friends disapprove of your entering this profession?

Each group also develops a list of things to watch for during the tour. Examples include:

- Do the workers seem happy?
- Do they have to interact a lot with each other on the job?
- Are only men or women in certain jobs?
- How do the production people and actors and actresses interact with each other?
- Does there seem to be a sense of fun and excitement backstage or do people act bored?

- **Field Trip and Interviews.** You or your students can arrange for a tour of a theatre production and interviews with staff either by contacting a stage production manager directly by telephoning a local theatre, or by enlisting the assistance of the school drama coach who may know of good contacts you can make within the community. College theatres in particular are often willing to demonstrate their facilities to students. Students inform the theatre(s) that they want both to tour the facility and to interview several backstage production workers after the tour.

- **Follow-up Discussion.** After the trip, each group reports to the class the results of its interviews. Discussion follows on one or more of the following issues.

1. What are the jobs for which dramatists must provide instructions in their plays? What are the jobs which have no written instructions and for which the director must therefore supply the information?
2. How do the production people relate to the actors and actresses? Do they ignore each other, socialize together, argue with each other, or work on production related tasks together?
3. How important is it that a dramatist provide clear and detailed instructions for set designers, props persons, wardrobe persons, choreographers, and set construction staff?
4. What are the appealing and unpleasant aspects of working backstage? For example, do backstage workers share in the publicity given to a successful play? What satisfactions do they get from working in an unseen position? Are they sometimes "frustrated" actors or actresses?

Useful Prior and Subsequent Activities:

- Students can attend a dramatic production, preferably the one on which they conducted their tour and interviews. Follow-up discussion can revolve around identifying aspects of the play which were the direct results of the labors of one of the people they interviewed.
- The class can watch the same television show one evening in their homes and then each student can write what he or she feels would be the appropriate directions each backstage production perso. would need to have been able to do his or her job effectively.
- Students can attend theatre rehearsals, including dress rehearsals, to observe several backstage "operations" in action.

Resources: Three hardbound books on producing plays may be of interest to students who wish to explore further in the field.

- **Play Production,** by Milton Smith, Appleton-Century (New York: 1948)
- **Play Production,** by Henning Nelms, Barnes and Noble (New York: 1956)
- **Play Direction,** by John E. Dietrich, Prentice-Hall (Englewood Cliffs, New Jersey: 1964)

Comments by Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Careers In Transportation, e.g.,
  - Truck Driver
  - Taxi Driver
  - Baggage Clerk
  - Ship Captain
  - Flight Attendant
  - Personnel Officer
  - Pilot
  - Train Conductor
  - Ship Officer

ENGLISH RELEVANCE:

- Writing
- Letter Writing
- Paragraph Formation
- Verbal Communication Skills
- Questioning

Activity #16

Subject Area:

English

HIRING FOR JOBS IN MOTION

Capsule Activity Description:

Students choose a transportation mode, research career opportunities in that mode, and simulate a company personnel department "hiring" applicants to work in that business.

Teaching Prerequisites:

materials needed: construction paper, crayons, help wanted sections of newspapers
contacts with community: none
approximate preparation time: ½ - 1 hour
approximate class time: 2 - 3 classes

English Objective:

to develop writing skills, with special focus on letter writing skills and paragraph formation.

ACTIVITY

This activity is designed to enable students to explore a wide variety of jobs in the field of transportation and at the same time provide familiarity with the occupation of a company personnel officer.

You can integrate the activity into your English class whenever you plan to focus on letter writing skills. In addition, the letters students write as part of the activity involve writing distinct paragraphs containing different themes, making the activity relevant when you discuss paragraph formation. The activity is also useful for reinforcing verbal communication skills, since the role plays require "personnel officers" to ask appropriate and clear questions and force "job applicants" to respond sensitively to these inquiries.

Activity #16

Divide the class into small groups. Each group role plays the personnel department of a new company in the transportation industry. To give the groups identity, ask them to choose a particular mode of transportation (airplane, train, boat, bus, taxi) and name their company accordingly, for example, Fred and Stella's Bus Company, Easy Rider Train Co.

Because these are "new" companies, they need to hire new employees. They must advertise to secure them. So that students can learn about the types of jobs and staff their "company" needs, they write a letter as a group to the personnel department of a company which provides the mode of transportation each group has selected to role play. You and they can identify appropriate local transportation companies to write to by referring to the Yellow Pages of the telephone book. Major companies to which students can write include:

American Airlines, Inc.
Personnel Department
633 Third Avenue
New York, New York 10017

Amtrak
955 L'Enfant Plaza, N.W.
Washington, D.C. 20024

Greyhound Bus Lines
Greyhound Tower
Phoenix, Arizona 85013

Cunnard Line
555 5th Avenue
New York, New York 10017

Pan American World Airlines
100 East 42nd Street
New York, New York 11203

Transworld Airlines
605 3rd Avenue
New York, New York 10016

Continental Trailways
1500 Jackson Street
Dallas, Texas 75201

Provide students with the following guidelines for writing their letters:

1.1 Tell the person you are writing (a) who you are, (b) your grade, (c) school, (d) what you are studying, and (e) why you would like information on the types of jobs the company offers. Include this information in the first paragraph of your letter.

2. In a second paragraph, explain that you need the following specific information on the types of jobs available in the company:

   a. description of the work people holding that job do;
   b. list of skills and information they need to do their jobs;
   c. salary levels; and
   d. working conditions.

3. Request any posters or brochures the company uses for advertising itself. Make this request the third paragraph of your letter.

You can help the groups to write their letters and then have each group present its letter to the class for improvements. A sample letter to an airline follows.

American Airlines, Inc.
Personnel Department
633 Third Avenue
New York, New York 10017

Dear _____:

We are students in the seventh grade at the Johnson School in Weston, New York. We are setting up a classroom personnel department in our study of different jobs, and we need information about them.

Please send us information on careers as a pilot, navigator, and flight attendant. We would like to know what these people do in their work, what kind of background and training they need for the job, salary ranges and working conditions in your company.

If you have any posters and brochures about your company that you could send us with which to decorate our personnel office, we would appreciate it very much.

Sincerely,

Mary Beth Ladd
Tim Stein
Jill Ferraro
Jonathan French

Johnson School
429 Pleasant Street
Weston, New York 32154

It will probably take some time for students to receive the materials. When they do arrive, the groups can begin to set up their personnel departments. Work can include designing and making posters and writing pamphlets and handouts to advertise the jobs that are available in the new companies.

- Posters should be large and visible. Students can make them as attractive and simple as possible so people will want to stop by and inquire about the available jobs.
- Handouts can resemble help-wanted ads. Bring in several help-wanted sections of the newspaper after which your students can base the design of their handouts. Tell your students they must say as much as they can about the job in as few words as possible.
- Pamphlets should say more than handouts and be as attractive and eye-catching as the posters. Here students can use both illustrations and short paragraphs to describe the job and the company.

When the materials have been made, the job of the company personnel department can begin. Request each department to give a short "talk" on their job openings as if they were trying to sell their jobs and company to the new employees.

Once the introductory talks have been presented, the individual personnel departments can start their interview sessions. Three sample role plays follow which students can implement. After using these, students can develop and role play job interview situations of their own creation.

Activity #16

Role Play A – Train

Applicant: I need a job. I'm really broke – my luck has run out. I don't want to work very hard and I sure hate getting dirty. Is there a job for me with your train company?

Role Play B – Airplane

Personnel Department: So, you think you want to be a flight attendant? You are a little short and I'm sure you're at least seven pounds overweight and I really wish we didn't have to hire male flight attendants. I like women stewardesses so much better.

Role Play C – Ship

Applicant: I'm a good worker – I really like to work. I've worked on loading docks before – I'm strong and healthy. I know I could do well here. Could you tell me about the job you're offering – does it pay well?

After conducting the role plays, conduct a follow-up discussion dealing with one or more of the following issues.

1. Why were three paragraphs necessary in the letters you wrote? Could you have provided the same information and made the same requests in two or four paragraphs?
2. How should you begin a letter to a stranger? How should you end a letter in which you have asked a favor of someone?
3. How should you address and sign a letter to a stranger?
4. In your role plays, were there any examples of sex stereotyping? Did any of the "personnel officers" refuse to hire someone because of his or her sex? Should a man or woman be considered equally for all of the jobs you researched?
5. What are the skills needed in the jobs you researched?
6. What are some of the things people do in these jobs that seem exciting or interesting like flying a plane or driving a truck? What are some of the less attractive aspects of these jobs? For example, does driving a truck get boring? Can driving a taxi be "nerve wracking"?
7. What skills are needed to perform well in the jobs you researched?
8. What do people do in the jobs you researched **besides** operate a vehicle?
9. What is it like to be a personnel officer? How does it feel to interview people? What questions should a personnel officer ask a job applicant? How can he or she tell if an applicant will be a good worker?

Useful Prior and Subsequent Activities:

- Students can take a field trip to one or more transportation companies or interview a local taxi cab driver, truck driver, or personnel officer.
- Students can invite one or more transportation employees to class to explain their jobs and answer questions from the class.

Comments From Teachers and Students After Using the Activity

OCCUPATIONAL FOCUS:

- Publishing Industry
- Advertising
- Teaching
- Repair Work
- Social Work
- Media Professions
- Journalism
- Law
- Theatre Occupations

ENGLISH RELEVANCE:

- Writing
- Reading
- Editing
- Questioning
- Oral Communication
- Interpretation
- Public Speaking
- Notetaking

Activity #17

Subject Area:

English

ENGLISH ON THE JOB

***Capsule Activity Description:**

Students determine how English skills are used in different occupations by interviewing people in relevant careers and writing a character sketch.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with different persons in the community
approximate teacher preparation time: ½ - 1 hour
approximate class time: 2 - 3 classes

English Objective:

To practice questioning and notetaking techniques, interpretation skills, and writing skills.

ACTIVITY

This activity has four steps. Participating students (1) identify occupations in which English skills are significantly used and then arrange for interviews with people employed in those occupations; (2) develop questionnaires and observation instruments for use while interviewing and observing these individuals; (3) conduct the interviews and observations; and (4) discuss the results of their research.

The activity can be easily integrated into an English course at almost any time, since the exercises involved relate to the three major English skills of reading, writing, and oral communication. More

*This activity has been revised from an activity developed by Edward V. Cornely. We are grateful for permission to use it. The original activity is part of *Integration of Career Education Concepts and Activities into the High School Curriculum*, Essex Junction Educational Center (Essex Junction, Vermont: 1973), which may be ordered from Essex Junction Educational Center, Essex Junction, Vermont 05452 for $3.00.

specifically, the activity can be used whenever you take up the skills of questioning and notetaking, since the activity requires students to develop their own questionnaires and take their own notes during interviews. In addition, the activity will help motivate students to learn and practice English skills because it will help them see the practical relevance of English for performing successfully tasks in a variety of different jobs and professions.

Initially, students either in small groups or individually identify as many occupations as possible in which English skills are significantly used, such as the jobs listed in the box at the beginning of this activity.

Students can then, with your assistance as needed, identify individual employees who hold these jobs in the community and arrange interviews with ones who are willing to be questioned and/or observed.

Next, students develop questionnaires and/or observation instruments appropriate to each person or group of persons they plan to contact. Sample questions students could ask an automobile or appliance repair person, for example, include the following:

1. What is your specific job title?
2. In general, what do you do in your job?
3. Which of the following skills, if any, are important for success at your job?

   writing reading listening and understanding oral communication questioning notetaking
4. Could you describe why these skills are important to your job?
5. Where and how did you learn these skills?
6. Do you feel you could have learned them better?

The following is the beginning of a sample observation instrument students might develop for use while watching a journalist at work:

SAMPLE OBSERVATION INSTRUMENT FOR JOURNALISTS

1. What are the different things the journalist does? As you observe, keep a running list of them on the back of this page.

2. Whenever you see the journalist using one or more of the following English skills, write down next to the skill exactly what he or she is doing that involves using the skill.

ENGLISH SKILL	JOURNALIST'S ACTIVITY
a. Writing	1) (For example, an article.)
	2) _____
	3) _____
	4) _____
	5) _____
	6) _____
b. Reading	1) _____
	2) _____

		3) _____
		4) _____
c. Editing	1) _____	
	2) _____	
	3) _____	
d. Speaking Publicly	1) _____	
	2) _____	
	3) _____	
e. Interpreting	1) _____	
	2) _____	
	3) _____	
	4) _____	
f. Questioning	1) _____	
	2) _____	
	3) _____	
g. Taking notes	1) _____	
	2) _____	
	3) _____	

After developing the questionnaires and observation instruments and duplicating copies of each, students divide up responsibility for the research, either conducting it in small groups or individually.

After conducting the research, students compare their findings, tally the totals, and present their conclusions to the class. Students can then engage in one or more follow-up activities, such as the following.

1. Class can discuss the importance of learning and practicing appropriate English skills while they are in school if they are considering a career in any of the occupations researched.

   Students can identify which occupations interest them most and which English skills are most closely associated with those jobs, so they can concentrate on developing those particular skills. Class can also discuss ways in which English skills are of practical value in other occupations. Finally, students can identify English skills all citizens need as pursuers of leisure time activities.

2. Students can make use of the information gleaned from their interviews and observations to write a short story, character sketch, or poem about an occupation they researched. Their writing can focus on one or more of the following issues:
   - How English skills are used in the occupation;
   - What the advantages and disadvantages are of the occupations;
   - Whether they personally would like to explore the occupation further;
   - How the personality of employees in the occupation relates to their successful performance in and satisfaction with the job.

3. Students can read one or more short stories or poems which deal with occupations and analyze them not only in terms of their literary value and techniques, but also in terms of what they indicate about the jobs they describe. Examples of appropriate short stories include:

- "Flowers for Algernon," by Daniel Keyes (doctors and nurses)
- "The Egg," by Sherwood Anderson (small restaurant owner)
- "The Far and the Near," by Thomas Wolfe (railroad engineer)
- "A Visit of Charity," by Eudora Welty (nursing homes)
- "The Patented Gate and the Mean Hamburger," by Robert Penn Warren (diner operator)
- "The Secret Life of Walter Mitty," by James Thurber (variety of jobs described which students can add to by continuing the story themselves)

Poems students can read and discuss which treat occupations include:

- "A Civil Servant," by Robert Graves
- "Dolor," by Theodore Roethke (office worker)
- "Eleven," by Archibald MacLeish (gardener)
- "Night Shift," by Sylvia Plath (factory workers)
- "The Gresford Disaster," anonymous (miners)
- "What Is He?," by D.H. Lawrence (cabinet maker)
- "Buyers and Sellers," by Carl Sandburg (laborers)
- "A Politician Is an Arse Upon," by e.e. cummings
- "Jazz Fantasies," by Carl Sandburg (jazz musician)

4. Students can interview people who are **consumers** of services provided by various occupations to learn whether people perceive their own occupations as others do. Students can interview parents, relatives, and friends about how they view such people as barbers, hairdressers, beauticians, auto mechanics, television repair persons, restaurant owners, funeral directors, law enforcement officers, teachers, plumbers, electricians, and carpenters, and salespersons in retail stores.

5. Students can invite one or more of the people they interviewed to class to discuss their occupations and the use of English skills in their jobs.

Resources:

Filmstrips: Guidance Associates, Pleasantville, New York 10570
"Developing Your Study Skills"
"Testing: Its Place in Education"
"Your School Record is Important," Science Research Associates,
259 East Erie Street, Chicago, Illinois 60611

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Teacher

ENGLISH RELEVANCE:

- Reading
- Interpretation
- Characterization

Activity #18

Subject Area:
English

TEACHING AND LIKING IT

Capsule Activity Description:

Students read and discuss the personality traits and tasks of a teacher.

Teaching Prerequisites:

materials needed: none
contacts with community: none
approximate teacher preparation time: ½ - 1 hour
approximate class time: 1 - 3 classes

English Objectives:

to develop reading and interpretation skills; to learn the nature of characterization.

ACTIVITY

The purpose of this activity is to use literature to expose students to the teaching profession. This same process can also be used for other careers.

You can integrate the activity into your English course at any time, since it involves the major English skill of reading. In addition, the activity can be used whenever you treat characterization in literature, since the activity involves students in delineating the character traits of an effective and satisfied teacher and then writing a character sketch of their own.

There are three steps to the activity: reading, small group discussion, and self-analysis by writing a character sketch.

- **Reading.** Assign students or let them select one or more pieces of literature to read that deal with the teaching profession in a significant way. Students can read non-fiction sources, especially biographies and autobiographies, or fictional accounts. Examples of appropriate paperback books follow.

  – **The Way It Spozed to Be,** by James Herndon (Bantam)
  – **36 Children,** by Herbert Kohl (Signet)
  – **The Open Classroom,** by Herbert Kohl (Vintage)
  – **Teacher,** by Sylvia Ashton-Warner (Bantam)
  – **Death at an Early Age,** by Jonathan Kozol
  – **Up the Down Staircase,** by Bel Kaufman (Dell)

  Before reading the books, instruct the class to keep the following points in mind as they read and to write responses to them after they have completed their reading.

  1. What tasks do the teachers described engage in?
  2. Why did they decide to become teachers?
  3. What do they like and dislike about their job?
  4. What would **you** like and dislike about their job?
  5. What are the teachers' personalities like? For example, are they kind or cruel? Patient or impatient? Do they have a sense of humor? Are they strict or lenient? List all the adjectives you can think of that describe them.
  6. Which of these aspects of personality would help someone to be a good teacher?
  7. Which of these personality traits do you have?
  8. Do you think you would be a good teacher?
  9. Do you think you would enjoy being a teacher?

- **Discussion and Analysis.** After students have completed the reading assignment, divide the class into small groups. Instruct the groups to:

  1. Explain to each other briefly what the book you read was about.
  2. Referring to your notes, discuss the personality traits you indicated would help someone to be a good teacher and a satisfied teacher.
  3. List the major tasks a teacher engages in as described in the literature you read.
  4. Add any tasks which teachers also engage in which were **not** mentioned in the books you read.
  5. Discuss why someone might want to become a teacher.

  Each group shares its results with and responds to questions from the rest of the class. You can mention any tasks teachers perform which students did not identify, such as:

  – keeping up with new developments in the field
  – conveying concepts to students
  – developing quizzes and tests
  – correcting homework
  – giving grades
  – providing after school help
  – preparing course or lesson plans
  – coping with discipline problems
  – motivating students to learn

- **Self Analysis and Character Sketch Writing Task.** Each student concludes the activity by writing a brief character sketch of him or herself. These sketches can be written anonymously and, if necessary, in the third person. At the end of each sketch each student writes two or three sentences indicating on the basis of his or her own personality whether he or she would be a good teacher and would enjoy being a teacher.

Conclude the activity with a class discussion in which you review the nature of characterization – how one writes character sketches, what purposes they serve in literature, and what constitutes good characterization.

Useful Prior and Subsequent Activities:

- Students can role play a principal interviewing a teaching applicant. The principal is interested in learning what the applicant is like as a person to decide whether he or she would be a good teacher.
- Students can invite the principal to class to explain how he or she decides whether to hire an applicant for a teaching position.
- Students can discuss whether school principals and superintendents need to have a different type of personality than teachers in order to be effective and to enjoy their job.
- Students can identify other jobs where the employee's personality is essential to occupational success and happiness.

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Publisher
- Editor
- Advertiser
- Journalist
- Circulation Manager
- Reporter
- Typesetter

ENGLISH RELEVANCE:

- Reading
- Writing
- Editing
- Journalism

Activity #19

Subject Area:
English

PUBLISH OR PERISH

Capsule Activity Description:

Students by means of a tour and interviews become aware of opportunities in the publishing industry.

Teaching Prerequisites:

materials needed: none
contacts with community: tour of a publishing facility
approximate preparation time: 3 - 4 hours
approximate class time: 2 - 5 classes

English Objectives:

to practice writing and editing skills; to practice interpretation skills.

ACTIVITY

In this activity, students tour a publishing firm or newspaper headquarters and interview employees performing the different jobs required to produce published materials. If a field trip is not feasible, employees from these companies can be invited to class to discuss their jobs.

You can integrate this activity into your English class at any time, since the activity involves discussion and practice of the major English skills of reading and writing. In particular, however, you can use the activity to illustrate how students can edit their own first drafts and revise them in terms of correcting or improving grammar, usage, style, and redundancy.

Students begin the activity by deciding whether they will visit a publishing company or newspaper. Small groups of students can also visit both and compare their findings at the end of the activity.

Activity #19

Having selected a site to tour, each group identifies and contacts a publishing house or newspaper to arrange for both a tour and interviews. Publishers of books and magazines in the local community can be identified in the Yellow Pages of the telephone book under "Publishers." Contacts can be made directly with the firm's personnel or public relations office or by having the school newspaper or yearbook faculty advisor make the initial contact. If the newspaper or publishing house has an education specialist (reporter, writer, or editor), he or she may be a good person to contact first to explain the educational nature of the activity.

When the groups have successfully arranged for their tour and interviews, each group prepares a list of the different major occupational areas in the publishing and/or newspaper business. Students can identify these job categories by using library resources and talking with the editors, writers, producers, and faculty advisors of the school newspaper and yearbook. Some of the task areas in a newspaper students can identify are:

- editing
- design and layout
- printing
- reporting
- advertising
- storage and shipping
- clerical and office
- purchasing
- reporting and writing (tasks which themselves can be divided into speciality areas, including news, editorials, feature articles, sports, obituaries, gossip, letters to the editor, and entertainment).

The occupational areas in a publishing house include the above but also involve marketing and cover design.

Before proceeding further, each group may need to contact the publisher or newspaper again to make sure that the types of persons students want to interview will in fact be available at the end of the tour to answer questions.

Once the groups have identified the general job areas and secured permission to interview employees of each area, each student within each group selects one area on which to concentrate for the remainder of the activity. Each student then develops a list of questions about his or her occupational area to ask during the interviews. Aside from their own imagination and curiosity, students can get ideas for questions by examining several issues of the firm's newspaper or several books, pamphlets, or magazines the publishing company has published. Suggested questions follow.

Sample Questions for Publishers and Newspapers

1. What are the specific jobs performed by the people in your field?
2. What is your relationship to these other people?
3. What does each of these other persons do?
4. What skills does each need? What English skills, in particular, do they use?
5. What kind of training did you and they need for the jobs and where and how did you get it?
6. What attracted you to this career? How did you get the job?
7. What do you like and dislike about the job?

8. Is there a need for people in these jobs and will there continue to be one (or not be one) in the future?

Sample Questions Just for Publishing Houses

1. How many unsolicited manuscripts do you receive, who sends them, what do they deal with, and what do you do with them?
2. What is the writing level of most of the materials you publish **before** you edit them? How much editing do you have to do? What is the background of the people who edit manuscripts?
3. How do you determine what royalties to pay?
4. Who decides whether to advertise any of your publications? Who writes the advertisements? Who writes the jacket blurbs?
5. Who does the graphics for book (or magazine) covers?

Sample Questions Just for Newspaper and Magazine Publishers

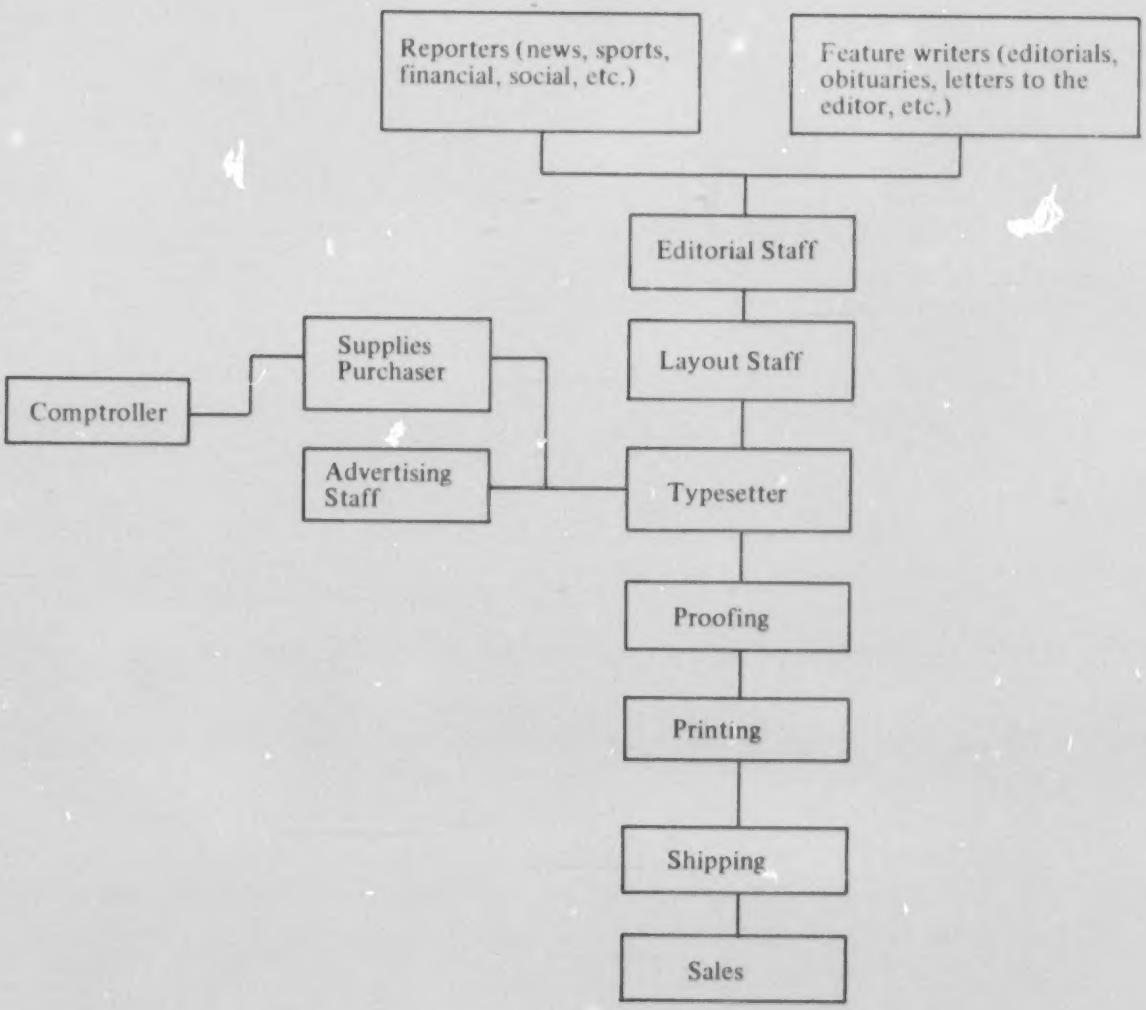
1. What is it like to work under the pressure of a daily (weekly, monthly) deadline?
2. What is your policy for accepting advertisements which may be deceptive?
3. What is your policy for reporting sex and violence?
4. How do you select which letters to the editor to publish?
5. Is the job of a reporter exciting because of the people you meet or the places you visit? Is it frustrating because of the deadlines or editorial changes made on your articles?
6. How do you try to ensure objectivity in your articles?
7. How is the layout for each issue planned? How is the text typeset? How is each issue proofed for typographical errors?

Each group also develops an observation instrument to guide them as they tour the site. Items on the instrument can include:

- sex and ethnic composition of the staff (Are women confined to clerical tasks primarily?)
- attitude of the staff toward their work (Are they cheerful? Hurried? Relaxed? Tense?)
- type of interaction among staff (Is there a lot of conversation? Exchanges of written materials?)
- working conditions (Is the facility clean? Crowded? Hot? Well lighted? Noisy? Smoky? Organized?)
- specific tasks being performed.

Having developed appropriate questions and observation list, students visit the firm, take a general tour, and conduct their interviews. After the interviews, students ask the person they talked with whose job interested them the most if they can spend an afternoon or weekend day observing that person at work. If this is possible, students take notes while observing. At the end of the visit, each student also requests a short sample of both the unedited and edited version of a newspaper article, magazine article, or portion of a book to take home to compare the two editions.

After the field trip, the groups meet together the following class period to share what they learned. Each group develops an organizational chart of the company it visited indicating how the different parts are related. A sample skeletal chart follows.


Reporters (news, sports, financial, social, etc.)
Feature writers (editorials, obituaries, letters to the editor, etc.)
Editorial Staff
Supplies Purchaser
Layout Staff
Comptroller
Advertising Staff
Typesetter
Proofing
Printing
Shipping
Sales

Each group now shares its results with the class and compares findings. Follow-up discussion can be held on one or more of the following issues:

1. How are English skills needed in some of the jobs you observed and talked about? Where did employees learn these skills?
2. How many reporters and authors write poorly and have to have their writing edited by other people? Does this interfere with their career?
3. How did the editor(s) revise some of the samples you were given of unedited and edited materials? Are there any poor English habits the original writers engage in and any standard ways in which the editors revise them? How many of the redundancies, poor grammar, incorrect usage, poor organization, and other faults with the unedited materials do you think you yourselves are "guilty" of in your own writing?
4. Why do people enter the publishing or newspaper business? What attracts them to it? Are they ever disappointed later with their choice? If so, do they have difficulty switching jobs or careers?
5. Which jobs attracted you the most? What did you like about them? What didn't you like about the other jobs?

As a final exercise, each student undertakes either to (1) revise an unedited writing sample provided by the publisher or newspaper and compare the revised versions with an example of the **publisher's** or **newspaper's** revised version of the same sample; or (2) edit a writing sample provided by one other student in the class. A general discussion follows on how students can learn to edit their own first drafts to improve their writing style and grammar.

Useful Prior and Subsequent Activities:

- A small group of students or an individual student can attempt to have a writing sample published.
- Students can volunteer to work on the school newspaper or yearbook.

Resources: The following novels and autobiographies describe the world of newspapers and publishing:

- **Making It,** by Norman Podoretz (autobiography of a magazine writer and editor of **Commentary**)
- **Facing the Lions,** by Tom Wicker (novel about the publishing industry and a reporter by a **New York Times** editor)
- **The Last Hurrah,** by Edwin O'Connor (novel about a newspaper cartoonist following the last campaign of a politician whose life is based on the career of James Michael Curley)
- **All The King's Men,** by Robert Penn Warren (novel describing a journalist following the career of a politican similar to Huey Long).

The following newspaper associations may have useful information:

Newspaper Institute of America
100 Mamaroneck Avenue
Mamaroneck, New York 10543

Newspaper Guild of New York
133 West 44th Street
New York, New York 10036

Activity #19

Newspaper Institute of America
2 Park Avenue
New York, New York 10016

Many large newspapers have publications for students and the general public describing their operations.

Comments from Teachers and Students after Using the Activity:

OCCUPATIONAL FOCUS:

- Teacher
- Salesperson
- Investment Broker
- Any Occupations – Teacher's/Students' Choice

ENGLISH RELEVANCE:

- Public Speaking
- Drama
- Communication Skills

Activity #20

Subject Area:

English

JOBS, ETHICS, AND LIFESTYLES

***Capsule Activity Description:**

Students role play conflicts arising from a career lifestyle.

Teaching Prerequisites:

materials needed: copies of the role descriptions
contacts with community: none
approximate preparation time: ½ - 1 hour
approximate class time: 1½ - 3½ classes

English Objectives:

to experience speaking and acting in public; to practice public speaking skills: to gain insight into the nature of dramatic productions and acting; to practice skills of clear and forceful oral communication; to practice writing skills (optional).

ACTIVITY

This activity involves students in role playing and developing role plays of situations in which two people have come into conflict as a result of the job demands placed on one or both of them. Each person is then required to resolve the conflict by balancing their occupational and other responsibilities with their concern about their interpersonal relationship with the other person.

*This activity has been revised from an activity developed by Robert Pasco. We are grateful for permission to use it. The original activity is part of *Integration of Career Education Concepts and Activities into the High School Curriculum*, Essex Junction Educational Center (Essex Junction, Vermont: 1973), which may be ordered from Essex Junction Educational Center, Essex Junction, Vermont 05452 for $3.00.

Activity #20

The activity can be easily integrated into a number of places in an English course, but most appropriately when the class is learning effective oral communication skills, including learning how to speak in public. If students develop their own role profiles, as suggested, you can usefully integrate the activity into your course when you discuss characterization in novels, short stories, poems, or plays, since in writing their roles, students will be developing short character sketches of their own.

Follow up each role play with a discussion around the following questions:

1. Was the conflict a real one?
2. How successful were the players in communicating accurately what they wanted to say to each other? Were there any noteworthy failures to communicate? If so, why did these occur? Poor word choice? Poor grammar? Incoherent statements? Failure to listen to what the other person was really saying?
3. What did the role play reveal about the character or personality of each player? How did the role play reveal character, or why did the role play fail to reveal the players' character? Are the ways characters were revealed in the role play similar to the methods novelists, poets, etc. use to reveal character?
4. What seemed to be the real reasons behind what the players said and did?
5. What alternative solutions might have occurred?
6. Would any students like to volunteer to repeat the role play in their own fashion?

The follow-up discussion can also revolve around two central issues these role plays reveal: sex and ethnic discrimination, and emotional conflicts associated with jobs. For example, the second role play can be discussed in terms of who should stay at home to "take care of the kids", how men may react to women in general and wives in particular who hold more prestigious or better paying jobs than they, and how the community and colleagues react to people who hold jobs not traditionally associated with their sex. The third role play raises the issue of reverse ethnic discrimination, how it manifests itself in the world of work and whether minority employees should eliminate it or take advantage of it.

The emotional or affective issues involved in the role plays are critical. For example, in the first role play, the husband must choose between at least four sets of values: the value he places on getting psychological and personal satisfaction from being promoted in his company; the value he places on making his wife and children happy; the value he places on the material benefits he can have by earning extra money. Jobs are more than simply performing a task from 9 to 5 five days a week. A wide range of emotional issues are involved in almost every job.

Four sample role plays are provided below. You or your students can revise them to suit your particular needs or develop ones of your own. Before engaging in the role plays, students can engage in one or more of the "warm-up" exercises suggested in the section on Role Playing in the chapter on Effective Teaching Methods for Career Education at the end of the manual. After the role plays, you can encourage students to develop their own role profiles in small groups, with each group presenting its profiles to one other group which then play the parts.

Situation One

Role A: You are Sam Salesperson and you earn a good salary. You spend many hours, including evenings and Saturdays, on the job. You do not particularly like this work, but you feel that the money you earn working overtime is important. You have just come home late – it's 11 p.m. – and your wife, Sally, is waiting for you. She looks angry.

Role B: You are Mrs. Sally Salesperson. You have been upset and complained to your husband, Sam, that he is never home. You have two children and feel your husband doesn't spend enough time with you and the kids. You are willing to give up many of your "luxuries" for a simpler life but a fuller family life. It is 11 p.m., the children are asleep, and you are waiting for Sam to come home from another night of overtime. You've decided he has to stop working seventy hours a week. Sam enters the house looking tired.

Situation Two

Role A: You are Tom Teacher and have been working in the local elementary school for three years. You like your work and want to continue. The salary is not essential, since your wife Theresa has a very good salary. You have a three-year-old daughter. You and Theresa are out to dinner and you sense that she has something on her mind.

Role B: You are Theresa Teacher and you are the high school principal. Since you have worked at this job, your salary and your position in the community have risen greatly; you are proud of both. You feel that your husband Tom should quit his job as an elementary school teacher and stay home with your daughter. Your salary is certainly enough to care for all of you. You have gone out to dinner, hoping to soften him up for the discussion you want to start. You look across the table and begin to talk.

Situation Three

Role A: You are Barry (or Betty) Broker and work with people's investments in a small rural town. You have done well in this firm and also like the town very much, because you have so many friends and enjoy the "country". You are single, so you are free to move but would not like to leave your town. Your regional manager, Bill (or Bess) Boss has called you to a meeting in the main company's regional office in (New York, Chicago, San Francisco). You enter the office wondering why you have been asked to make the trip. You're a little concerned because, being part Indian, you are surprised at your superior's attention.

Role B: You are Bill (or Bess) Boss and are the regional manager of a major national investment firm with assets of over four billion dollars. You have been very impressed with Barry (or Betty) Broker who is in charge of one of your small town offices. There is a job opening in the regional office that you want Barry (or Betty) to fill because the position involves supervision of local brokers in Nebraska, North Dakota, and South Dakota, rural states where Barry's (or Betty's) intimate knowledge of rural and small town life will be invaluable. In addition, Bill (or Betty) is partly Indian, and by promoting him (her), you can help satisfy the federal government's requirement that your company hire more minority staff in important company positions. The salary will be doubled. The chance for advancement is almost unlimited. Possibly this person could take your job when you retire in five years. You are sure he (she) will jump at the opportunity. You have summoned him (her) to your office and as he (she) enters, you get up from behind your desk to greet him (her). Then you explain the offer.

Situation Four

Role A: You are Everett Smith, a teacher in the Quiet Cove junior high school and president of the Parent-Teacher Association. You have two children in the neighborhood elementary school. As a parent, resident and teacher, you are angry about the proposed expansion of the small community airport in your town to serve regional transportation needs and accommodate scheduled air carrier flights. Even now, you must stop teaching whenever a small commuter jet takes off because your students cannot hear you. When the new runway is added, it will

bring the planes even nearer the school and even closer to your house. So you circulated a petition among the students and teachers in the neighborhood and obtained 500 signatures. In your petition you demand that the airport add a runway in a different direction. You have just walked into the office of the airport general manager, Jane Doe, with your petition. What do you say?

Role B: You, Jane Doe, are the general manager of Quiet Cove Municipal Airport. Your airport is small and now serves only private aircraft and a few air taxis. The region has started to grow and several large industries would move into the area if they had better air service. The local Chamber of Commerce and the regional development commission are pushing for another runway. With the technical assistance of the Federal Aviation Administration (FAA), you have decided to add a runway in the direction of the town of Quiet Cove so you will have airport service during most of the good and bad weather conditions. You know that this will make more noise for the Quiet Cove community as planes take off and land over their neighborhood; there is a lot of pressure on you from the airlines, the business community, and the local government officials to expand. You could expand in another direction, but to do so would involve filling in the Cove, and this would be too expensive, and could create problems with the natural environment. The FAA recommended solution is cheaper and probably the best compromise. You feel badly about the noise, but feel you cannot stop construction of the new runway. You have just ushered into your office Mr. Everett Smith, who made an appointment with you a week ago to talk over the airport expansion problem. How will you respond to him?

Useful Prior and Subsequent Activities:

- Students can invite parents who have experienced one of the problems in the role plays to attend the class during the role play and indicate how in their own lives they actually resolved the problem illustrated.
- Students can invite someone from an employment agency, personnel office, or career counseling service to class to observe and comment on the role plays.

Resources: Interesting fictional accounts of salespersons include:

- **Death of a Salesman,** by Arthur Miller (play)
- **The Pawnbroker,** by Wallant (novel)
- **The Assistant,** by Bernard Malamud (novel)
- "Buyers and Sellers," by Carl Sandburg (poem)

Comments from Teachers and Students after Using the Activity:

Section Three: MATHEMATICS

1. ACTIVITIES SUMMARY

This section of the manual contains the following ten activities, sequenced very generally from easiest to most difficult.

21. *__TEACHING MATH:__ Students discuss instructional strategies for teaching mathematics and then apply these methods to in-class and/or after-school math teaching projects.
22. __WINNING AT MATH:__ Students play a team game anwering math questions relevant to various occupations.
23. __SOLVING JOB PROBLEMS:__ Students are given budgeting problems to solve and defend.
24. __MATH ON THE JOB:__ Students survey parents and neighbors and make observations on the use of math in occupations in their community.
25. __DOW, JONES, AND EINSTEIN:__ Students study various aspects of the financial world and "invest" in the stock market with imaginary money.
26. __MATH IN THE HOME:__ Students research different household management projects and apply mathematical concepts in a practical setting.
27. __CALCULATE YOUR TRIP:__ Students visit a travel agency and then plan an imaginary trip and write trip-related mathematical word problems.
28. __BUYING CHARTS AND GRAPHS:__ Students research and interview buyers in different industries, graph their findings, and present them to the class.
29. __DON'T FENCE ME IN!:__ Students listen to people whose jobs involve fence building and then do calculations related to the mathematic concepts used in barrier construction.
30. __FIGURING OUT OUR HEALTH:__ Students visit health facilities to study how their statistics are recorded and then discuss how these statistics are obtained and used to improve community health.

*The activities in this section of the manual begin with number 21 because the numbering continues sequentially after the last activity (number 20) of the previous section of English activities.

2. INTRODUCTION

As a junior high mathematics teacher, you should consider career education as an integral and appropriate component of your teaching which will **increase your students' ability and motivation to learn mathematics skills.** Moreover, as a mathematics teacher, you are in a good position to integrate career education activities into your courses because you teach a variety of skills which are essential components of many occupations, from engineering to survey design.

How will the integration of career education activities into your mathematics courses help you achieve your subject area objectives? There are at least two answers to this question.

1. Many of the **skills** in mathematics curricula will be developed or reinforced through the use of career education activities, including such mathematics skills as sampling, scale drawing, and working with fractions, linear functions, word problems, algorithms, and significant numbers. Career education activities can help students comprehend the theoretical aspects of mathematics by seeing or engaging in the **practice** of mathematics. For example, if your class designs, administers, and analyzes a poll of members of a particular occupation, the students will, in a realistic context, be developing skills in sampling, graphing, averaging, addition and division.

2. By including career education activities in your courses, you will increase your students' **motivation** to study and develop mathematics skills. By studying careers related to mathematics in exciting action-oriented ways, students will be stimulated to delve further into the field related to the occupations they are investigating. For example, students who study engineering as a career by interviewing engineers and simulating some of their tasks will probably want to learn more about the concepts of measuring, geometry, and scale drawing. In this manner, career topics have the attractiveness of "relevance" for studying and learning mathematics skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected, as well as involved student who wants to know what mathematics has to do with the world of an adult: "Can studying linear functions get me a job?" is the unspoken query of many students today.

How can integration of career education with mathematics operate in practice? Let's look briefly at a hypothetical Sample Week's Lesson Plans to see how you can integrate career education activities into your mathematics courses.

3. SAMPLE WEEK'S LESSON PLAN

The week's lesson plans presented here are suitable for any junior high mathematics course which plans to discuss the concept of "the average." Homework assignments in the lesson plans refer to **work due that class period** and not work to be assigned that night.

A teacher has decided to integrate a career education activity into his or her third and fourth class periods. In this activity (Activity #30), students visit clinics which deal with health, family or public welfare to study how their statistics can be used to improve community health. Students are introduced to this activity one or two weeks prior to introducing the concept of averaging to the class and given the information presented in Activity #30. This activity has been introduced **after** the students have reviewed percentages. It is assumed that the students are not **totally** ignorant of the average process, as this is generally introduced in early grades.

This activity introduces the student to various occupations in health, family and public welfare services, a **career education opportunity.** It demonstrates how and what mathematical concepts are used in these fields along with providing students with an opportunity to apply statistical concepts used in the classroom, a **mathematics objective.**

SAMPLE WEEK'S LESSON PLANS

(An illustration of one way to integrate a career education activity into your course.)

HOMEWORK ASSIGNMENT	DESCRIPTION OF CLASS ACTIVITY
Students complete visits to health facilities. Students collect data from immediate family such as age, weight, height of parents and brothers and sisters, number of children in the family, age parents are married. Students make two copies of this data.	• Review concept of averaging. • Assign one student per category to list data from homework in columns by category. Have students pass in one copy of their family data and have one student read data to preserve anonymity. • Divide class into small groups, assigning one category to each group. Students calculate the average of each category. • Students report their findings and a discussion follows as to how well the average of each category reflects the actual data in the column. (E.g., if the average age of the fathers is 35 and your father is 47, what does this mean?) • Students copy "family data" from board for future use.
Students examine data obtained from visiting health facilities and compute averages for relevant data if not even. Students write a short paragraph describing how the average compares with data and how accurate they believe the average is in reflecting the data.	• Present class with two sets of numbers (17, 48, 106, 91, 3) and (53, 52, 53, 55, 52); average is computed and compared with each set. Discuss how the average typifies each set and the usefulness and limitations of the average. • Show class a weight-height chart and discuss how the chart is developed. Raise questions such as, "If my weight is what it should be, as indicated by the chart, does this mean that I am 'physically fit'?" or "If my weight isn't what is stated on the chart, should I worry?" Refer back to "family data chart" whenever possible to point out the differences between the average and the recorded information and what emphasis should be placed on these differences.
Students organize statistics and information gathered from facilities for presentation to the class. Students search newspapers, magazines and listen to radio and TV to discover used of average (e.g., weather reports might mention "average" monthly temperature).	• Discuss application of averages, such as standing of baseball teams, tax rates, seasonal temperatures, mortality rates and how this information is collected and used. • Students discuss how statistics were collected in the health facilities they visited or researched and the ways these statistics are used in the facility. • List as many different examples of statistics as possible.

SAMPLE WEEK'S LESSON PLANS

(An illustration of one way to integrate a career education activity into your course.)

HOMEWORK ASSIGNMENT	DESCRIPTION OF CLASS ACTIVITY
Students write an analysis of the strengths and weaknesses of the statistics presented during the third class.	• Students continue their reports and discussion from the previous day. • Students role play a situation in which a staff member from a health clinic is presenting statistics at a press conference. Other students assume roles of reporters who are questioning the statistics, doctors and staff from the health clinic who are supportive of the statistics and concerned citizens who are trying to analyze the meaning of the statistics. Students should question the implications of the statistics. Do they show or are they predicting any serious problems in the community? the world? (Activity #30)
Students write a short essay on their interest in a career in Health, Family or Public Welare; on what they discovered from the interviews and class discussion that was of particular interest to them; and what mathematical concepts they understood or didn't understand.	• Teacher rearranges data in "family data chart" within each category in numerical order as a prelude to introducing the concept of median and mode. Teacher then calculates the median and mode of two categories and discusses the meaning of each. Comparisons of median, mode and average (arithmetic mean) are made.

4. CROSS REFERENCE

The cross reference below identifies by number activities which treat particular occupational issues and jobs (listed across the top of the page) and activities which reinforce specific mathematics topics and skills (listed down the left-hand margin of the page). By using the reference, you can locate activities by specific jobs or occupational issues which you may want to teach or by particular mathematics topics and skills which you feel are relevant points in your curriculum at which to introduce a study of careers.

MATHEMATICS

CROSS REFERENCE

TOPIC OR SKILL \ OCCUPATIONAL FOCUS	Architect	Bank Manager	Bank Teller	Certified Public Accountant	Civil Engineer	Computer Programmer	Computer Technician	Fence Builder	Financial Analyst	Health Careers	Household Management Professional	Land Surveyor	Poll Taker	Public Welfare Careers	Purchaser	Statistician	Stockbroker	Teacher	Travel Agent	Travel Information Representative
Algebra							23													
Algorithms					30	30	23													
All Areas																	21			
Area							23			24										
Arithmetic							23			24								22	22	
Averaging									27				27							
Binary System					30	30														
Conversion (metric)										24										
Conversion (money)																		22	22	
Computer Programming					30	30														
Computer Science					30	30														
Decimals																		22	22	
Deductive Proofs																		22	22	
Divisions		25	25	25				25							25					
Flow Charts					30	30														
Geometry	29				29			23		24	29							22	22	
Graphing		25	25	25				23	25					26		25				
Interest		25	25	25					25	24						25				
Inverse Variation								23												
Logic					30	30														
Map Reading																		22	22	
Mean, Median									27				27							
Measurement	29				29					24	29									
Multiplication		25	25	25				23	25							25				
Percents		25	25	25					25	27	24		28	27		28	25			
Perimeter								23												
Sampling													28		28					
Sequencing																		22	22	
Simple Equations																		22	22	
Statistics									27				28	27		28				
Subtraction		25	25	25					25							25				
Trigonometry	29				29						29									
Word Problems										24										

OCCUPATIONS TREATED:

- Teacher

MATHEMATICS RELEVANCE:

- All Areas

Activity #21

Subject Area:
Mathematics

TEACHING MATHEMATICS

Capsule Activity Description:

Students discuss instructional strategies for teaching mathematics and then apply these methods to in-class and/or after school math teaching projects.

Teaching Prerequisites:

materials needed: none
contacts with community: none
approximate preparation time: 1 - 3 hours
approximate class time: maximum ½ class per project

Mathematics Objective:

to reinforce and develop math skills.

ACTIVITY

This activity is divided into two parts: class discussion regarding teaching problems and methods, and peer teaching. The purpose of the first part is for students to:

- develop empathy for teachers in order to better understand the problems faced by teachers;
- identify qualities that people need to be good mathematics teachers; and
- identify appropriate teaching techniques for mathematics classes.

The second part allows students to teach mathematics to their peers by participation in one or more special projects. These projects are designed to motivate, reinforce and develop their mathematical skills.

Activity #21

Although the activity can be introduced at any time in a mathematics course, it is best integrated into a math curriculum early enough to allow the projects to take place over a long period of time.

Part One. The activity begins with students identifying what they feel the mutual responsibilities of teachers and students are to each other. Students break into small groups to identify and examine activities mathematics teachers engage in, such as:

- keeping up with new developments in the field
- conveying concepts to students
- helping students develop mathematics skills
- developing quizzes and tests
- correcting homework
- giving grades
- providing after school help
- preparing course or lesson plans
- coping with discipline problems
- instructing students to learn

The small groups identify the satisfactions and frustrations each of these activities can provide for mathematics teachers. In particular, each group identifies the most effective instructional strategies for teaching math, such as lectures, homework, discussion, audiovisual methods, and peer teaching. A large class discussion follows in which students analyze each group's conclusions and reach a consensus on what mathematics teachers do, what satisfactions and frustrations the profession provides, and what instructional strategies are effective for teaching mathematics knowledge and skills. You can elaborate on students' conclusions based on your personal experience. In addition, you can discuss the claim, "Those who can, do; those who can't, teach." Do some people become teachers because they can't find or be successful in occupations such as statistics, engineering, computer programming, etc.?

Part Two. Describe the following projects to students and instruct them to choose one they would like to engage in:

- Tutoring Project
- Group Instruction Project
- Student-Teacher Project
- Student Aide Project

Class breaks into small groups, each group concentrating on the same project. If possible, implement the projects over a long time period. For example, students who choose the tutoring project need not all be assigned to tutor in the same month. Instructions for each project follow.

Tutoring Project. Students who select this project tutor students in mathematics, preferably younger students or students who are not in their mathematics class. Students who select this project:

- tutor in his/her weakest area, if possible;
- discover the subject area the students need to be tutored in from the teacher at least two days prior to the tutoring session;

- review the material and learn it;
- ask the teacher for suggestions as to the best approach for teaching the subject matter to be taught;
- make use of what was learned in the small group discussion related to student-teacher relationships;
- arrange the time for the tutoring session;
- conduct at least two tutoring sessions.

It is your responsibility to find students who need tutoring and determine the subject area the students need to be tutored in. If there are no students in your own classes who wish to be tutored, you can make arrangements with your department head and/or other math teachers to find students who need tutoring. Tutoring can be done during a student's unassigned period or after school. You may need to be available to assist the student who is doing the tutoring.

Group Instruction Project: A group of no more than 5 students teach each other advanced or unusual areas of mathematics. For example, computer language, topology, non-Euclidean geometry, figurate, amicable, perfect, deficient and abundant numbers, numerology, Fibonacci numbers, magic squares, Napier's rods, Pascal's triangle, the golden rectangle and golden section, four-dimensional geometry, polar coordinates, Boolean algebra, matrix algebra, continued fractions, functions, trigometric functions of the right triangle, Archimedes' method of Exhaustion, probability, Moebius strip and the Klein bottle. Students who select this project should:

- be responsible and well disciplined students;
- be willing to work with others in a group structure;
- decide on a topic area as a group and obtain your permission to proceed with this topic;
- research the materials separately or as a group;
- explain and demonstrate the concepts to each other as a group;
- present a brief written report to the teacher which includes:
  - a description of the material learned;
  - suggestions for improving future "Group Instruction Projects"; and
  - a list of all references used in their research.
- give an oral presentation to the class (optional).

Student Teacher Project. Students, working in pairs, teach a segment of "their own" mathematics class. You can assign the topic or students can choose one from the list provided in the Group Instruction Project. Students who select this project:

- work closely with the teacher in preparing their lesson; and
- rehearse their presentation in front of the teacher at least two days prior to their teaching it.

Student Aide Project. For this project, distribute a worksheet with the answers to the problems to the class. Students then aid you in helping other students solve the problems on the worksheet when difficulties arise. Instruct the class to:

- do the worksheet by themselves, checking their answers once problems are done;
- raise their hand when they have an incorrect answer after attempting the problem a second time.

The student aides then:

- ask the student for an explanation of the work that led to the incorrect answer;
- point out any careless errors; and
- help the student **discover** the correct method for solving the problem by asking leading questions. (The student aide should not **do** the problem **for** the student.)

Give the student aides a copy of the worksheet at least two days prior to its distribution, so that they may complete each problem on the work in advance and be able to consult with you on any problems they were not able to understand. Do not use more than two teacher aides for each worksheet and do not lecture on the material covered in the worksheet prior to its distribution. The class should be assigned reading on the worksheet material prior to its distribution. A sample worksheet follows on the next page.

Useful Prior and Subsequent Activities:

- Continue projects throughout year by having students choose different projects to develop games to help reinforce mathematics learning experiences.
- Students can interview school mathematics teachers about their profession.

Resources:

Robert Hawley, **Value Exploration Through Role Playing,** (Hart Publishing Company, Inc. New York, 1975), paperback.

American Federation of Teachers
1012 14th Street, N.W.
Washington, D.C. 20005

National Education Association
1201 16th Street, N.W.
Washington, D.C. 20036

Comments from Teachers and Students after Using the Activity:

Sample Worksheet

ALGEBRA WORKSHEET

1. State the degree of each of the following terms.

   (a) $xy^2 + y^2$ (b) $xy^2 + y^2 + 5$ (c) $2x^3y^2$

   (d) $2x^3y^3z^5$ (e) $2x^3y^2z^5 + xy^2$ (f) $2x^3y^2z^5 + xy^2 - 7$

2. Simplify:

   (a) $(b^3 - 2b^2 + 3b + 4) - (b^3 - 4b^2 + 2b - 1)$

   (b) $5t + 3s - 2(2t - 4s) + 3(5s + 8t)$

   (c) $2a^2 - 3(ab + 2a - 3b) + 2a(5a - 4b) - (6a - 5b)$

3. Solve and check the follcwing:

   (a) $2 - 3(2x - 5) = 2x - 7$

   (b) $4y - 1 = 31$

   (c) $-343 + 9n = 2n$

   (d) If $A = \frac{1}{2}h(a + B)$, find a when A = 65, b = 5 and h = 10.

SPECIAL of the DAY: Worth 4 points on the next test. You must work on this problem by yourself. All work must be shown. Copy the problem over on another piece of paper and pass it in when you have finished.

Solve the following equation under the set of real numbers:

$$18 - 5\left(\frac{1}{n} + 2\right) = 2$$

FOLD HERE

FOLD HERE

Answers

1. (a) 3
   (b) 3
   (c) 5
   (d) 10
   (e) 10
   (f) 10

2. (a) $2b^2 + b + 5$
   (b) $9t + 265$
   (c) $12a^2 - 11ab - 12a + 14b$

OCCUPATIONAL FOCUS:

- Career Awareness

MATHEMATICS RELEVANCE:

- Addition
- Subtraction
- Multiplication
- Division
- Fractions
- Time
- Money
- Word Problems

Activity #22

Subject Area:
Mathematics

WINNING AT MATH

Capsule Activity Description

Students play a team game answering mathematics questions relevant to various occupations.

Teaching Prerequisites:

materials: questions (1 set per team), paper (several sheets per student), pencils, rulers (1 per student), newspaper
contacts with community: none
approximate preparation time: 30 - 60 minutes
approximate class time: 1 class

Mathematics Objectives:

to reinforce basic mathematics skills.

ACTIVITY

This game is a great deal of fun and students enjoy playing it. It can be used to review and strengthen any number of mathematics skills and it is a profitable rainy day, end of week activity. Sample game questions have been provided, all of which focus on the use of mathematics in various careers.

The activity can be used at any grade level, depending only on the nature of the questions. It encourages participation of all students by requiring each one to submit answers to the questions. The activity tends to create noise, so use the plan accordingly.

The objective of the game is to answer all the questions correctly in the shortest amount of time.

Activity #22

Procedure:

- Divide the class into teams of 5-7 members.
- Situate them on the floor in various parts of the room.
- Each team elects a team captain and chooses a team name.
- Distribute paper to the teams – students bring pencils and ruler with them.
- You sit at the head of the room with a set of questions for each team. The questions in each set are in different orders so that teams will not be working on the same problems at the same time, thus eliminating confusion.
- The team captains come forward, take their first question, and return to their teams.
- The captain quietly reads the question aloud to the team and they all start to work on it. When the team gets an answer it is written on a piece of paper. All team member worksheets are turned in with the answer. Everyone must complete all problems. Students may be helped by other team members.
- The captain brings forward the answer, takes next question, and goes back to his team.
- The game continues on until all the teams have answered all the questions.
- The team answering the greatest number of questions correctly in the least amount of time wins.

Prior and Subsequent Useful Activities:

Students can make up their own game questions.

Resources:

Occupational Information, R. Huppock, McGraw-Hill, 330 West 42nd Street, New York, New York 10036

Encyclopedia of Careers and Vocational Guidance, Vols. I and II, William E. Hopke, Doubleday, Garden City, New York 11530

Comments From Teachers and Students After Using the Activity:

QUESTIONS

1. Here is some newspaper. Make a captain's hat from it and write your team name on its side. Your captain wears the hat throughout the game and passes it in with the answer to your last question.

2. You are Nurse Rogers, head of Floor 7 in City Hospital. It is time to take your patient's pulse. In pairs, take each other's pulses. Write names and pulse rates on a piece of paper.

3. You are an architect. You have to draw some plans for a new school. Using this room as a model, draw it to scale. ¼" = 1'. To get the dimensions of the room, one student in the group walks off one side and another student the other side. 1 pace = 1'. Each student draws the room, indicating windows, doors, blackboards, and desks.

4. You are a navigator for a big airline. You told your family you would be home (Atlanta, Georgia) tonight, but plans have changed. You haven't been able to call home so you decide to send a telegram.

   "I'm in Chicago. Won't be home tonight. Will leave here at 10 a.m. tomorrow and fly (non-stop) to Seattle Washington. Arrive there at 12 noon their time. Leave Seattle tomorrow at 3 p.m. and arrive home at midnight. Pick me up at the airport."

   How many hours did it take to fly from Chicago to Seattle, Seattle to Atlanta?

   answers: Chicago to Seattle – 4 hours
   Seattle to Atlanta – 6 hours

5. This is your first day as a teller at Big Money Bank and Trust. Things went well – not one hold up at your window. Now you have to "close-out" for the day to make sure you have the correct amount of money in your drawer.

   The computer says you should have $5,275.19. That does **not** include what you started with this morning. Check to see if you are right. If you are off, find out by how much – work in pairs.

   (1) This morning you started with:

150-1 dollar bills	_____
50-5 dollar bills	_____
50-10 dollar bills	_____
30-20 dollar bills	_____
10-50 dollar bills	_____
Total	_____

   (2) Now you have:

5 checks:	$1,492.17
	211.54
	8.19
	31.29
	421.00
Total	_____

   (3) Cash:

321-1 dollar bills	_____
212-5 dollar bills	_____
108-10 dollar bills	_____
30-20 dollar bills	_____
1-50 dollar bill	_____
Total:	_____

   (4) Total checks and cash: $ _____

Answers:

(1) $1550.00
(2) $2164.19
(3) $2535.00
(4) $5275.19

You close out to the penny. Good work.

6. You own the pizza shop in town and if you do say so yourself, you make pretty good pizza. You just got a call ordering pizza for the Roberts' party tonight. They are having 35 people and everybody is to get 2 pieces of pizza. You get 6 pieces from one pizza. How many whole pizzas do you make for the Roberts so that there will be enough for the party? Clue: Round off to largest number. Answer: 12

   The pizzas cost $2.35 each. How much money will the Roberts give you? Answer: $28.20

7. You are the head chef for the biggest and best restaurant in town. There is a special party tonight and you are going to make your extra special chocolate pudding. It's a big party so you have to triple the recipe.

   The recipe is written below. How much of each ingredient will you need if you make three times as much (work in pairs).

Chocolate Pudding

1 cup sugar	OR	.24 liters sugar
1 egg		1 egg
1 cup milk		.24 liters milk
1 tablespoon melted butter		15 milliliters melted butter
1½ ozs. melted chocolate		42 grams melted chocolate
1½ cups flour		.36 liters flour
¼ teaspoon salt		1.25 milliliters salt
1½ teaspoons baking powder		7.5 milliliters baking powder
½ teaspoon vanilla		2.5 milliliters vanilla

8. You are a truck driver for the "Everything but the Kitchen Sink" Moving Company. Your headquarters are in Denver, Colorado. Monday you are leaving for Chicago with a truck load of furniture. You should arrive there Tuesday night. Wednesday morning you pick up more furniture and head off for Washington, D.C. You will be expected to arrive in Washington late that same night. Thursday the truck is to be unloaded and you will take on two grand pianos for delivery to Boston. You leave for Boston early Friday morning, scheduled to arrive there in the afternoon.

   The company has given you $350 for gas and emergencies plus your daily company allowance of $15 per day. Before you leave you better check to see that the company gave you enough money.

   (a) How much money will you spend on gas between Denver and Boston?

Denver to Chicago	1050 miles or 1680 kilometers
Chicago to Washington, D.C.	725 miles or 1160 kilometers
Washington, D.C. to Boston	450 miles or 720 kilometers

Your truck gets 6 miles or 9.6 kilometers to a gallon of gas. Gas costs 55¢ a gallon.

Answer: $196.63

(b) You're wondering how many times you will have to stop to fill your gas tank along the way. You know it holds 50 gallons of gas. Remember: you get 6 miles or 9.6 kilometers to a gallon of gas.

Answer: 8 times

(c) If the company gives you $15 per day personal spending money, how much do you have to spend on the whole trip?

Answer: $75

(d) How much money do you have for emergencies?

Answer: $78.37

OCCUPATIONAL FOCUS:

- Political and Appointive Offices
- Controller
- Homemaker

MATHEMATICS RELEVANCE:

- Addition
- Subtraction
- Multiplication

Activity #23

Subject Area:
Mathematics

SOLVING JOB PROBLEMS

Capsule Activity Description:

Students are given budgeting problems to solve and defend.

Teaching Prerequisites:

materials: paper, pencils
contacts with community: none
approximate preparation time: 1 hour
approximate class time: 30 minutes per problem

Mathematics Objectives:

to reinforce addition, subtraction and multiplication skills

ACTIVITY

Students are given budgeting problems, in the form of occupational tasks, to solve and defend to the best of their ability. The activity can be done individually or in pairs, in class during free mathematics time or as a homework assignment. It can be used to:

- build upon and reinforce basic mathematics skills; and
- provide practical application of these skills.

By adding other problems to the ones already provided here, you can expand its relevance to many more occupations and mathematics skills.

Activity #23

Give students who have finished their work early a problem to solve. The problems are solved by balancing a budget. Allow students as much time as needed to arrive at an appropriate answer. The amount of time alloted depends on the ability of the students. Work on the problem can be spread over several class periods or, as mentioned above, assigned as homework.

After the problem has been worked out, it is to be presented to the class. Items left in the budget are to be defended and reasons stated for those items removed. For example, in problem #3, the homemaker decides that in order to balance his or her budget, the family will not have any entertainment this month. The reasoning is that Peter needs a pair of sneakers more than the family needs the movies. You and the class act as devil's advocates during the presentation.

The presentation follows the format outlined below.

- The original budget is written on the chalkboard.
- The new budget is written next to it.
- The new total must match the funds allocated for the budget.
- The budget is read aloud and defended.
- At the conclusions of the presentation, questions and/or comments are taken from the class acting as town council, board of directors, or family members.
- Students respond to these questions and comments in light of their budgets.
- The budget is then voted on and accepted or rejected.
- If the budget is rejected, give the same problem to another student(s) to try to solve in an acceptable manner.

After each presentation, the class discusses various aspects of the budgeting process. Sample questions follow.

- Have you ever wanted to buy more than you can spend? What did you do? Why?
- If your parents were to spend too much money on medical bills in one month would something else have to be cut out of the budget? What would happen if they had to cut down on groceries for a month? How would you feel if the food ran out and there was no more money to buy any groceries?
- How do you decide what is important in a budget and what can be left out?
- What might happen to someone in a job if he or she incorrectly calculated the budget?
- If you were to hire someone to balance a budget, what kind of person would you look for to fill the position?

Useful Prior and Subsequent Activities:

- If students get an allowance they can balance their own budgets for one month.
- Students can be given a yearly family income ($10,000) and then work in "family" groups to budget the money monthly.
- Students can study taxation – how and why it is implemented and what is taxed. If a parent is employed as an accountant or by the Internal Revenue Service, invite him or her to class to describe the job and why taxes are imposed.
- Students can be asked to devise a budget for a family on welfare.

- You can invite an insurance company representative (preferably a parent) to class to explain his or her job and how payments are calculated after a robbery. Students are given a problem where all their belongings from their bedroom have been stolen. They estimate the cost of lost property, calculate what they will recoup from the insurance company and devise a budget for replacing their belongings.
- Students can examine the school budget and devise ways to improve it.

Comments From Teachers and Students After Using the Activity:

Activity #23

ROLE PLAYS

Mayor

You are the Mayor of Centerville, a small town in the Midwest. You have to make sure the town is going to have enough money next year to pay its bills. You already know there won't be enough money to pay those bills so you will either have to raise taxes or cut some things out of the budget. The people of Centerville don't have very much money so raising taxes is not a good idea. Instead you will have to cut some items from the budget.

Here are the items in the budget and how much they cost (sometimes you will have to figure out the total cost for the items). You can spend $100,000. Figure out what you can cut from the budget to make it balance. You do not always have to cut out a **whole** item. Remember, you will have to define your budget before the city council (the class) so you need a good reason why you leave things in and why you cut things out of your budget.

Town Budget

Schools	
2 teachers' salaries (each one makes $8,000)	____
1 janitor's salary	$4,000
300 students, (it costs $40 to provide each student with books and supplies)	____
Heat	1,000
Department of Public Works	
road maintenance	7,000
snow plowing	4,000
water maintenance	1,000
garbage pickup	4,000
Police Department	
2 police officers' salaries (each makes $9,000)	$____
maintenance of one police car (gas, checkups, insurance)	1,500
2 switchboard operators' salaries (each makes $4,000)	____
utilities (heat, telephone, electricity)	1,000
Fire Department	
2 firefighters' salaries (each makes $8,000)	$16,000
maintenance on 2 fire engines	4,000
pay for volunteer fire fighters – there are 10 volunteers, there are approximately 20 fires every year, each voluntary fire fighter gets $5 per fire	____

Parks and Recreation

1 summer counselor	$1,000
equipment	1,500
park maintenance	1,500
2 life guards at pond ($500 each)	____

Mayor's Office

1 secretary	$6,000
Mayor's salary	10,000
supplies	400
utilities	700

TOTAL: $129,100

Company Controller

This may be a small company, but every year it seems to get harder to come up with a budget to fit the amount of money the company can spend. It is very hard to cut out items in your budget when they are all so important.

The president of the company has insisted that you cannot spend over $200,000 or the company might have to close down.

Here are the items in the budget and how much they cost (sometimes you will have to figure out the total cost for the items). Figure out what you can cut from the budget to make it balance. You do not always have to cut out a **whole** item. Remember you will have to defend your budget before the board of directors (the class) so have a good reason why you leave things in and why you cut things out of your budget.

Company Budget

Salaries	
15 employees in all	
10 earn $10,000 per year	$____
4 earn $15,000 per year	____
1 earns $20,000 per year	20,000
Employee Benefits	
insurance	
it costs $100 for each employee	$15,000
coffee	700
one turkey for each employee at Christmas – each turkey costs $10	____
Supplies	$ 3,000
Furniture	
1 desk for President	$ 1,000
1 chair for each worker (1 chair costs $40)	600
furniture for lobby	2,000

New Machinery/Equipment	
5 new machines (each one costs $5,000)	____
3 machines repaired 3 x $1,000	____
Utilities	$2,000
	TOTAL: $332,450

Homemaker

It doesn't seem like you every have enough money anymore. Every month you run short. Something always comes up – one of the kids gets sick and has to go to the doctor, the car breaks down and has to be fixed, or it's your mother's birthday and you have to buy her a really nice present. If it's not one thing that costs money it's another. This month it's going to be different. You are **not** going to run out of money.

You decide to make a list of all your expenses for the month and all the things you have to buy. Then you will try to make all those things fit your budget.

Here are the items in the budget and how much they cost (sometimes you will have to figure out the total cost for the items). You can spend $740. Figure out what you can cut from the budget to make it balance. You do not always have to cut a whole item. Remember you will have to defend your budget before the whole family (the class) so have a good reason why you leave things in and why you cut things out of your budget.

Family Budget

Food	
$70 per week and there are 4 weeks in a month	$____
Rent	$200
Utilities	
(heat, electricity and telephone)	$ 65
Recreation	
movies for children	$ 4
movies for parents	2
Car Payment	$175
Car Maintenance	
Tune-up	$ 75
Clothing	
Jane: new shoes	$ 9
new dress (her father promised she could have one)	12
Peter: new sneakers for physical education	7
Father: new gloves, old ones wore out last week	5
Dentist	
Mother: filling fell out	$ 7

Miscellaneous

Bank Loan	$ 50
	TOTAL:

OCCUPATIONAL FOCUS:

- Career Awareness
- Pollster

MATHEMATICS RELEVANCE:

- Charts

Activity #24

Subject Area:
Mathematics

MATH ON THE JOB

Capsule Activity Description

Students survey parents and neighbors and make observations on the use of math in occupations in their community.

Teaching Prerequisites:

materials: copies of surveys
contacts with community: student-made contacts
approximate preparation time: 30 - 60 minutes
approximate class time: 2 - 3 periods

Mathematics Objectives:

to become aware of the relevance of mathematics to real-life situations; to develop skills in gathering and organizing data

ACTIVITY

This activity can be integrated into your curriculum to introduce students to the many and varied occupations that encompass some form of mathematics skills and operations. It also gives practice in gathering and evaluating data and displaying it in chart or graph form.

The class conducts 2 kinds of surveys – interview and observation – to gather information on the use of mathematics in local occupations. A questionnaire is designed for use in interviewing parents, relatives, or neighbors; an observation sheet is developed for use in observing people working at various jobs in the community.

Discuss with the class the difference between the two survey instruments. Point out that in one case the students ask questions and get answers. In the other case the students are only able to infer

answers to questions from actions they observe. In both instances the students try to obtain as much information as possible. Sample items to be included in the questionnaire and observation sheet follow. These items are put on the chalkboard so students can refer to them while designing their own survey instruments.

Questionnaire

- What is occupation of the person interviewed?
- Where was place of work?
- What does person do on job?
- Does person use mathematics?
- What kind of mathematics skills, operations or problems does he or she use?
  – addition, subtraction, multiplication, division, other
- Did the person need special training for his job?
- Does he or she like the job?

Observation Sheet

- What occupation was observed?
- Where was work taking place?
- What was person doing on the job?
- Did he or she use mathematics?
- Did it seem to play a large or important part in the job?
- What kind of mathematics was used?
  – addition, subtraction, multiplication, division, other
- Did the person seem to like his or her job?

Divide the class into four groups for the purpose of brainstorming for questions for the survey instruments. Each group appoints a chairperson to direct the discussion and a scribe to record the questions. Two groups are selected to design the questionnaire and two groups to design the observation sheet. Allow 10-15 minutes for the brainstorming (or an amount of time appropriate to your students' abilities).

At the end of the brainstorming period the group scribes read aloud their group's questions which are written on the chalkboard – the questionnaire on one side and the observation sheet on the other. The class decides on the best questions or items for each instrument.

Duplicate and distribute 2 copies of the questionnaire and one copy of the observation sheet to each student. Allow the class a sufficient amount of time to complete the surveys. Parents, relatives and neighbors are interviewed using the questionnaire, and a community worker is used to fill in the observation sheet (waitress, gas station attendant, librarian). Remember: the homemaker should not be overlooked as an occupation.

This activity requires a certain amount of sensitivity to students' and parents' feelings about their jobs, family life, and lack of work or family life. For example, students whose parents are unemployed or deceased may be embarrassed and confused by the activity if you routinely assume every student has an employed parent. One way to avoid such problems is to make clear from the beginning that students do not have to interview an employed parent, but can also interview an employed relative or neighbor or interview a parent who may not be currently employed but who has held one or more jobs in the past. You can also attempt to ensure the anonymity of the questionnaires by having students turn them in to you, without their names on them, and typing them so that there is no handwriting by which other students can guess at the family involved.

As the surveys are completed, students take turns reading various ones so that the class can get an idea of how the results are coming in. Discussion follows the reading of the sample surveys. Each session has a different focus:

- Why is training important to these jobs?
- What would you do if you were an employee and made a mistake in your work?
- Do any of these jobs we heard about today appeal to you? Why?
- Why is it important to do a good job?

Prior to the survey due date, make a large retrieval chart similar to the one attached. If desired, this can be a project for several students. When the surveys are completed, gather the information onto the chart. Students have their surveys on their desks in front of them – parent/relative/community worker – in that order, left to right – to aid them in quickly finding the responses and observation notes.

- Proceed across the chart starting with the parent survey.
- Students indicate a positive response by raising their hand. The number of raised hands is put in the appropriate box.
- All the occupations interviewed and observed are listed on the chart in the far right column.

When the retrieval chart has been filled in, discuss:

- Compare the number of people who use mathematics in their work to the total number surveyed. Do the numbers tell you anything?
- Judging from our survey, is there a need to study mathematics in school? Why?
- What kind of people were surveyed – white collar/blue collar? Which type of worker would be more apt to use mathematics in his or her work? Why?
- How many people seemed to like their jobs? What does this number tell you?
- Why do people take certain jobs – what do they think they will like about them? Are they concerned about the type of work involved and the salary? Do they also have concerns about having job security, following in a parent's or role model's footsteps, being "desperate" for a job and taking the first opening available, having evenings and weekends free, avoiding or desiring a job that requires responsibility or initiative, or finding a job which offers the opportunity to exercise authority, leadership, or creativity?

Useful Prior and Subsequent Activities:

- Students can write up their own daily activity charts, highlighting the activities where some form of mathematics is used.
- Students can graph answers to survey questions, indicating percentages and trends.
- Students can write a "Who Needs Mathematics Anyway" book, listing occupations that do **not** use mathematics or show ways one could do a certain job without using mathematics.

Resources:

Occupational Information, R. Huppock, McGraw-Hill, 330 West 42nd Street, New York, New York 10036

Encyclopedia of Careers and Vocational Guidance, Vols. I and II, William Hopke, Doubleday, Garden City, New York 11530

Comments From Teachers and Students After Using the Activity:

Activity #24

OBSERVATION SHEET

1. Occupation being observed: _____

2. Location: _____

3. What is the person doing on his or her job? (Be specific) _____

   _____

4. Did he or she use any mathematics skills? Yes____ No _____

5. Did it seem to play a large or important part in the job? Yes ____ No ____
   Why? _____

   _____

6. What kind of mathematics skills were used?
   addition _____
   subtraction _____
   multiplication _____
   division _____
   other (specify if possible) _____

7. Did the person seem to like his or her job?
   Why?/Why not? _____

   _____

8. Do you think the person is doing a good job? _____

9. Would you like to have a similar job? Why or why not? _____

   _____

   _____

   _____

QUESTIONNAIRE

1. Name: _____

2. Occupation: _____

3. Place of Business: _____

4. Describe your job duties – be specific: _____

_____

5. Do you ever use mathematics skills in your work? Yes ____ No ____

6. If yes, how and to what extent? _____

7. What kind of mathematics skills do you use?
   addition _____
   subtraction _____
   multiplication _____
   division _____
   other (specify if possible) _____

8. Did you need special training for this job? _____

9. Did you need any training in mathematics for this job? _____

10. If you were to make a mistake in the mathematics in your job and the boss found out, would you be in trouble? Why? _____

11. Do you like your job? Why or why not? _____

12. If you could do something else what would it be? _____

13. Why did you take this job or train for it? What attracted you about the job?

_____

_____

_____

RETRIEVAL CHART

	# who use math in job	# who use math a great deal	# jobs that require training	Type of Mathematics Skills Used: Addition	Subtraction	Multiplication	Division	Other	# who like or seem to like their job	List of Occupations Interviewed and Observed that use mathematics
Parents N =										
Relatives/ Neighbors N =										
Observations N =										

(N=number of surveys completed for each of the 3 categories - should be equal to the number of students in your room.)

OCCUPATIONAL FOCUS:

- Financial Analyst
- Stockbroker
- Certified Public Accountant
- Bank Teller
- Bank Manager

MATHEMATICS RELEVANCE:

- Multiplication, Subtraction, Division
- Percents
- Interest
- Graphing

Activity #25

Subject Area:
Mathematics

DOW, JONES AND EINSTEIN

Capsule Activity Description

Students study various aspects of the financial world and "invest" in the stock market with imaginary money.

Teaching Prerequisites:

materials needed: graph paper, rulers
contacts with community: writing financial institutions; visiting banks
approximate preparation time: 1 - 2 hours
approximate class time: 1 - 2 classes

Mathematics Objective:

to develop skills in using interest, percents, dollars, multiplicaton, subtraction, division, addition and graphing.

ACTIVITY

The purpose of this activity is to expose students to the many careers in the financial world and to develop awareness of the practical applications of mathematical procedures learned in the mathematics class, such as percents, interest and graphing.

You can integrate this activity into your math lesson plans at several points, such as after a discussion of percents, interest, or graphing or whenever class discussion focuses around any of the financial institutions mentioned in this activity, especially the stock market.

If it is not feasible for your students to visit or write to banks, you can invite interested bank employees to visit the class to discuss banking procedures and careers. In addition, since the activity has several parts, you can implement only parts of the activity or assign it as an independent student study project.

Activity #25

The activity has two parts which can be conducted concurrently. Part One involves research; Part Two simulates investing in the stock market.

Part One

Divide the class into small groups. Each group chooses one institution to research, write to, or visit. Possible financial institutions are:

- savings bank – savings only
- commercial bank – checking accounts only
- bank - loans and mortgages
- guaranteed return investments – bonds, life insurance
- stock market
- credit – ratings and cards

Students can arrange for interviews by talking with school officials responsible for the school's finances, such as the payroll officer or comptroller. This person will have contacts with a local financial institution which students can pursue. Students can also enlist the aid of their parents, some of whom may work in one of these institutions, know someone who works in one, or have a personal contact as a result of having had business dealings with the institution.

Instruct each group to obtain information through their research, interviews, and/or letter writing in the following five general areas:

1. What are the types of jobs that these institutions provide (e.g., bank guard, teller, Certified Public Accountant, broker, financial analyst, stockbroker)?
2. What kinds of services does each institution provide the public (e.g., checking account, savings account, loans)?
3. What do people do at these jobs?
4. What skills are needed for these jobs?
5. What mathematical concepts are used in the various jobs, including all mathematics formulas used?

Each group then develops a list of questions it wants answered by "its" institution. Sample questions follow.

1. What is your official job title? What exactly are you responsible for doing?
2. How is mathematics involved in your job: what mathematics skills do you use?
3. Do you enjoy your work? What do you like about it and what don't you enjoy? Is the part of your job where you use mathematics interesting? Is it boring?
4. What attracted you to a career in finance? What attracts other people?
5. Are there any women or minorities in executive or supervisory positions in your institution? How many? If there are few, why is this the case?
6. Do you use different standards when considering a loan (mortgage, etc.) to a woman than for a man? Do you issue credit cards to married women in their own name? How long have you been doing so? If you haven't always done so, why didn't you originally and why did your policy change?

After the groups have conducted their interviews and received answers to their letters, each group gives a brief presentation to the class describing the results of its research. Follow-up discussions can focus on one or more of the following issues:

1. Which jobs involve the heaviest use of mathematics? In what specific ways is mathematics necessary for the tasks involved?
2. What skills besides mathematical skills are needed in these occupations?
3. What specific formulas and other mathematical skills which we have studied are used in these jobs?
4. Which jobs seem interesting and offer an opportunity for creativity? Which seem to involve primarily rote work? What other satisfactions and frustrations do these jobs present?
5. Is there any discrimination against women or minorities in any of these institutions – for example, in lending money, giving credit, providing credit cards, or financing major purchases? Should there be any discrimination? For example, should banks give less emphasis to a young, married, childless woman's salary when deciding whether to finance a house mortgage under the assumption that she will have children shortly and lose her job and income?
6. Why are there so few female and minority supervisors, executives, and officers in most financial institutions? Can women handle "money" matters as well as men supposedly can?

Part Two

Concurrently with their research tasks, students are given $1,000 in imaginary money to "invest" in the New York or American Stock Exchange for a one month period. Students then:

1. Discuss with their parents, relatives, or faculty members which stocks might be the best to buy. Factors such as the profitability of a firm, future prospects and the general economic situation can be considered. Is this a good time to invest in General Motors? In a sugar company?
2. Choose two companies as their first and second choice. No two students should be allowed to invest in the same company. You monitor the selections.
3. Find out basic information (type of products manufactured, mined, etc.) by calling a stock broker. For example, if a student chooses to invest in Roblin Industries or Dur Tst, he or she must find out what these companies deal in and what "Dur Tst" stands for.
4. Determine the last price of one share of stock from the financial section of a newspaper, such as 6¼ ($6.25) or 14 1/8 ($14.125).
5. Calculate the number of shares of this stock $1,000 will buy, keeping track of any change left over. For example, if a student invests in Continental Can Company stock which was last selling for $26.50 a share, he or she makes the following calculations to determine how many shares the $1,000 will purchase:

```
        37.
265.)10000.
     795
     ----
     2050
     1855
     ----
      195
```

37 shares may be purchased, leaving a remainder of $19.50. This $19.50 will be added to the money earned or lost when the shares are converted back to money at the end of the month.

The actual amount of money invested by this student is $980.50 ($1,000 - 19.50 = $980.50).

6. On a daily basis
   - look up the cost of one share (printed in the financial page of newspapers) for an entire week;
   - multiply the number of shares bought by the price of the share for that day;
   - record this information on a chart and a graph as illustrated in the examples on the following page. Post the graphs for inspection by the class.
7. At the end of one month, add any unspent money to the value of the shares and then determine profit or loss. Permit students to "sell" their stocks at the end of two weeks and purchase another stock. This might occur if a stock is constantly decreasing. Do not give the student another $1,000, but let him or her invest the amount obtained from selling his or her first stock.

After each student has completed the above seven steps, determine which students made and lost money, and how much. Discuss why people might have made or lost money. Was there any day on which most stock prices decreased or increased? What was happening in the world that day that might explain these changes?

Calculate how much money would have been made if the $1,000 was deposited in a savings bank for one month and compare this to the average profit or less for the class. On the average, was it more profitable to invest in the stock market or a bank?

Follow-up discussion can also focus on what the job of a stockbroker is like – how a stockbroker might be able to invest money more wisely than the students did, and why some investors turn to stockbrokers rather than invest money themselves.

Useful Prior and Subsequent Activities:

Students can hold onto their stocks and after several months graph the results of their holdings for another one month period to determine whether the same people profited or lost again.

Resources:

Students can write to the Federal Reserve Bank in their region for banking information.

FEDERAL RESERVE BANKS

Publication Services
Division of Administrative Services
Board of Governors of the Federal Reserve System
Washington, D.C. 20551

Federal Reserve Bank of Atlanta
Federal Reserve Station
Atlanta, Georgia 30303

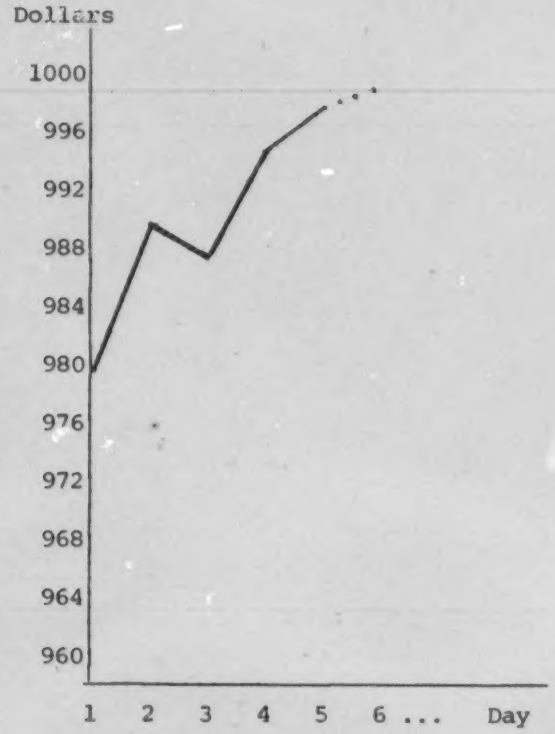
Federal Reserve Bank of Boston
30 Pearl Street
Boston, Massachusetts 02106

Federal Reserve Bank of Kansas City
Federal Reserve Station
Kansas City, Missouri 64198

Federal Reserve Bank of Minneapolis
Minneapolis, Minnesota 55440

Federal Reserve Bank of New York
Federal Reserve P.O. Station
New York, New York 10045

Federal Reserve Bank of Philadelphia
P.O. Box 66
Philadelphia, Pennsylvania 19105



Day	Cost per Share	Value of Total # of Shares
1	26.50	$980.50
2	26.75	989.75
3	26.70	987.90
4	26.90	995.30
5	26.98	998.26
6	. . .	. . .

Continental Can Company
Number of shares: 37
Unspent money: $19.50

Post the graphs for inspection by the class.

Federal Reserve Bank of Chicago
Box 834
Chicago, Illinois 60690

Federal Reserve Bank of Cleveland
P.O. Box 6387
Cleveland, Ohio 44101

Federal Reserve Bank of Dallas
Station K
Dallas, Texas 75222

Federal Reserve Bank of Richmond
P.O. Box 27622
Richmond, Virginia 23261

Federal Reserve Bank of St. Louis
P.O. Box 442
St. Louis, Missouri 63166

Federal Reserve Bank of San Francisco
San Francisco, California 94120

Also, students can write for information to:

Merrill Lynch Pierce Fenner Smith
165 Broadway
New York, New York 10006

National Association of Bank-Woman
111 East Wacker Drive
Chicago, Illinois 60601

Comments from Teachers and Students after Using the Activity:

OCCUPATIONS TREATED:

- Household Management Professional

MATHEMATICS RELEVANCE:

- Arithmetic
- Geometry
- Word Problems
- Conversion (metric)
- Measurement
- Area
- Interest
- Percent

Activity #26

Subject Area:
Mathematics

MATH IN THE HOME

Capsule Activity Description:

Students research different household management projects and apply mathematical concepts in a practical setting.

Teaching Prerequisites:

materials needed: none
contacts with community: none
approximate preparation time: 2 - 4 hours
approximate class time: 1 - 1½ classes

Mathematics Objective(s):

to reinforce the practical application of basic arithmetic and geometric skills that are relevant to household management.

ACTIVITY

This activity is designed to provide students with a wide range of projects that will demonstrate practical applications of many mathematical concepts, such as area, cost computation, interest, percents, and measurement. Information needed to conduct these projects is readily available from the local library, local businesses and, most importantly, from students' parents.

You can integrate the activity into your mathematics class at any time of the year, but most relevantly when practical examples of the application of mathematics for the consumer are needed.

Each student engages in three different household management projects. The projects involve researching specific areas of homemaking. Students, as a result of their projects, are prepared to explain

the processes involved, step by step, and to write at least three math word problems that are linked to these processes. Two examples of these outcomes follow.

Example 1. **Painting**

1) Describe the process of determining how much paint to purchase to paint one room.
   - Determine the total surface area to be painted by:
     - calculating the total surface area of the four rectangular walls;
     - calculating the area of the doors and windows in the room;
     - subtracting the smaller area from the larger area.
   - Read the spreading rate of the paint found on the label of the paint can.
   - Divide the total surface area to be painted by the spreading rate to determine the number of cans of paint to purchase.
2) Two sample word problems are:
   - How many gallons of paint should be purchased if the area to be painted is 850 square feet and the spreading rate of the paint is 400 square feet per gallon?
   - What would the total cost of the job be if the paint costs $2.50 per quart?

Example 2. **Garment Making**

1) Run through explanation of making a garment from a pattern. Show:
   - How to pin and cut a pattern;
   - How to stitch and press seams;
   - Tailoring and fitting;
   - Measuring;
   - French patterns – converting metric to English system.
2) Three sample word problems are:
   - Take in a 27-inch waist band to fit a 24½ inch waist, showing
     - number of darts involved
     - size of each dart
   - Measure an even hem line;
     - from waist
     - from floor
     - from hem fold
   - Convert a three centimeter measurement into inches.

Research methods can include:

1) Interviewing parents and neighbors
2) Questioning garden clubs, 4-H clubs, home-management instructors, shop instructors, mechanics, plumbers, electricians, carpenters, etc.
3) Reading "how to" manuals provided by:
   - Government
   - Library
   - Local clubs and organizations

4) Asking store owners selling such home supplies as:
   - Fabric
   - Hardware
   - Tile and paint
   - Groceries or kitchen supplies
   - Lumber store
5) Reading bank brochures
6) Reading books on:
   - Math
   - Cooking
   - Home Economics

Students can select from among the following areas to investigate:

1) Cooking – a main course or vegetable dish
   - Measuring
   - Metric conversion
   - Increasing and decreasing recipes
2) Baking
   - Timing – rising in cooking with yeast, cooking in oven
   - Temperature – how it varies for glass or teflon pans
3) Interior design
   - Geometry – shapes, angles
   - Color charts
4) Painting
   - Paint needed to cover an area
   - Cost of supplies
5) Electricity
   - Wiring, circuits, overloaded circuits
   - Volts, watts
   - Converting European voltage to American voltage
6) Carpentry – windows, furniture, shelves
   - Geometry – shapes, angles
   - Measuring
7) Grocery shopping – family
   - Unit pricing – is family size cheaper?
   - Prices per pound
   - Budget shopping
8) Grocery shopping – consumer awareness
   - Shopping cost recorded with pocket calculator
   - Brand names and unknown brands. Is quality guarantee worth the extra price?
   - Price increases

9) Savings bank
   - Types of interest
   - Special plans, gifts, benefits

10) Checking account
   - Services
   - Cost of accounts

11) Home costs
   - Mortgages
   - Resale value
   - Rent
   - Tax (property)

12) Budgets – hypothetical
   - Money earned per year (all salaries)
   - Money spent per year (include everything)
   - Income Tax
   - Mortgage Payments

13) Paying bills
   - Phone
   - Electric
   - Charge accounts
   - Penalties for non-payment or late payment

14) Scheduling
   - Efficiency expertise
   - Planning around bus, school, train or other schedules

15) Car costs
   - Gas mileage
   - Repairs (labor, new parts)
   - Depreciation

16) Laying out tiles
   - Choosing correct number to cover an area
   - Fitting – geometry, shapes and angles

17) Clothing design
   - Measuring
   - Metric conversion

18) Plumbing
   - Circumference of new pipes and other parts
   - Angles at which pipes are installed

19) Buying home repair and carpentry equipment
   - Lengths of nails, bolts, screws, screw drivers, hammers, drills, etc. (reasons for these lengths)
   - Circumference size of nails, bolts, etc. (reasons for these sizes)

Students can choose their own areas to research or you can assign topics. In either case, when suggesting or assigning projects, be careful to avoid sex stereotyping. For example, don't suggest that the girls might be interested in doing projects such as cooking or clothing design, or that the boys might care to do a project on automobile costs or plumbing.

Following the research, you can raise for discussion one or more of the following issues:

- If students selected projects traditionally associated with their sex, why did this occur? Why, for example, do the boys not want to consider clothes design as a career, or girls plumbing?
- What kinds of discrimination may occur against women and men who train for and enter occupations traditionally associated with the other sex? How can these people cope with such discrimination?
- How do people decide which occupations to enter? How often do people consider (or reject) certain occupations, for example, primarily because one of their parents are employed in the field?
- Do any of the careers studied involve extensive use of mathematics? What kinds of mathematics? How much training in mathematics is necessary to obtain the necessary mathematics skills?
- Is the mathematics required in these occupations dull, rote work or varied and interesting or both?

Prior Useful and Subsequent Activities:

- Students can implement some of their own research or a friend's research at home.
- Students can interview people employed in the careers or invite them to talk to the class.

Resources:

Students can explore past issues of the following magazines for additional ideas:

Better Homes and Gardens Magazine
Handyman's Magazine
Woman's Day Magazine
Family Circle Magazine
Consumer Reports

Comments from Teachers and Students After Using the Activity:

OCCUPATIONS TREATED:

- Travel Agent
- Travel Industry Representative

MATHEMATICS RELEVANCE:

- Geometry
- Arithmetic
- Decimals
- Conversion (money)
- Map Reading
- Deductive Proofs
- Simple Equations
- Sequencing

Activity #27

Subject Area:
Mathematics

CALCULATE YOUR TRIP

Capsule Activity Description:

Students visit a travel agency and then plan an imaginary trip and write trip-related mathematical word problems.

Teaching Prerequisites:

materials needed: none
contacts with community: visiting a travel agency
approximate teacher preparation time: ½ - 1 hour
approximate class time: 1½ - 2 classes

Mathematics Objective(s):

to develop concepts of money conversion, time zone factors, map reading, simple equations, sequencing, and writing deductive proofs.

ACTIVITY

This activity introduces students to careers in tourism and provides students with an opportunity to develop their planning skills. It can best be integrated into a mathematics curriculum following exercises designed to write deductive proofs, develop simple equations or improve skills working with decimals.

The deductive proof is a sequence of steps leading from the given information to the proof of the hypothesis. Although some steps in the proof may be interchanged without changing the validity of the proof, there is some information that must precede other information. This is also true for planning a trip. There are certain givens (the amount of money you have to spend, where you wish to travel, etc.) and there is a final destination that is to be reached.

Activity #27

Simple equations can be developed based on travel across time zones and the rate of exchange of currency. For example:

- If your trip takes you across 12 time zones, then the equation $y=x+12$ can be developed where x represents the time at your point of departure and y represents the time at your destination.
- The equations $C=1.005A$ and $A=\frac{200}{201}C$ can be developed where C represents the number of Canadian dollars and A represents the number of American dollars based on the exchange rate that $1 Canadian = 1.06 American dollars.

Students can conduct the activity either in small groups, as a class, or as individual independent study projects.

Students begin by identifying one or more travel agents who are interested in being interviewed. Students can identify them by soliciting names of travel agents from staff who have taken trips. Students can also consult the Yellow Pages for travel agencies which may be interested in having students pay them a visit to ask questions. If field trips are not feasible, students can invite one or more travel agents to come to class to discuss their jobs and answer questions from the class. In addition, students can invite citizens who have taken trips and made use of travel agents to come to class to discuss what the travel agents did for them.

Prior to visiting the agencies or before a travel agent comes to class, students develop a set of questions they would like to ask, such as the following:

1. How do you go about planning a trip for an individual traveler? for a group? for foreign travel? for domestic travel?
2. How do you make arrangements with airlines and hotels?
3. What information do you need to obtain from travelers, such as time schedules, method of payment, number in the party, etc.?
4. What information do you provide to travelers, such as local health problems in the places to which they are traveling, weather conditions, passport and visa problems, places to visit, tips about language problems, local customs to be aware of?
5. How important is it for you to be familiar with the places of interest at the locations to which tourists travel?
6. What currency problems can tourists expect to encounter and how do you help them avoid or solve them?
7. What fringe benefits are there for you as a tourist agent – for example, free trips or trips at reduced rates?
8. What training did you need to become a travel agent and how did you get the training?
9. What are the disadvantages to being a travel agent? For example, do you receive complaints from tourists for whom you have made unsatisfying bookings?

After conducting the interviews, students divide into small groups and plan an imaginary trip involving a minimum of two modes of transportation, one change of currency, and one time change. Plans include arrangements that have to be made with all the different people and places whom travel agents have to contact, including hotels, ground transportation providers (e.g., car rental agencies, bus companies), airlines, and catering services. Groups are given at least a week in which to conduct the research necessary to plan their trip, including:

- determining departure and arrival times of all modes of transportation used;
- identifying appropriate hotels and their rates;
- "securing" ground transportation, such as bus service and car rental arrangements;
- determining how much spending money will be needed for the trip and how much of that money should be in the form of travelers' checks and in foreign currency;
- noting all time changes that will occur;
- identifying any special problems associated with travel to the destinations chosen – such as language barriers and health problems; and
- identifying how and when to secure passports and visas.

Each group writes on the basis of its research a detailed "Travel Plan" and then develops at least two word problems that relate to:

- conversion of foreign currency to American currency;
- time zone changes; or
- arrival and departure times and distances traveled.

For example,

> "Mr. and Mrs. Smith want to go to France. Their travel agent has to call France to verify their travel plans. He or she has to call France at 10:00 a.m., European time. How can the agent determine what time to call local time?"

Groups then present their travel plans to the class for discussion and comparison, present their word problems for solution by other class members, and discuss the occupation of travel agents in terms of work involved, skills needed, and advantages and disadvantages to the job.

Groups conclude the activity by role playing five-minute travel dramas around one or more of the following situations:

- a currency exchange problem;
- a time zone problem;
- "tourists" planning a trip with a travel agent; problems the tourists can present to the agent can include limited finances, limited time to travel, health problems (can't travel to cold or wet climate, for example), transportation problems (fear of flying, for example) or language deficiencies.

After each role play, the class discusses what the activity revealed about tourism as a career and how it uses mathematics skills.

Resources:

Students can write for further information to:

Travel School of America
1406 Beacon Street
Brookline, Massachusetts 02146

American Society of Travel Agents
360 Lexington Avenue
New York, New York 10017

Activity #27

Comments From Teachers and Students After Using the Activity:

OCCUPATION FOCUS:

- Purchaser

MATHEMATICS RELEVANCE:

- Graphing Linear Functions
- Graphing Systems of Equations

Activity #28

Subject Area:
Mathematics

BUYING CHARTS AND GRAPHS

Capsule Activity Description:

Students research and interview buyers in different industries, graph their findings, and present them to the class.

Teaching Prerequisites:

materials needed: graph paper, rulers
contacts with community: interview with buyers
approximate preparation time: 1 - 2 hours
approximate class time: 1½ - 2 classes

Mathematics Objective:

to reinforce knowledge of graphing linear functions.

ACTIVITY

This activity reveals to students one aspect of a career in marketing. It also reinforces their knowledge of graphing linear equations. Graphing equations with respect to "x" and "y" axes is often an abstract concept for students. This activity provides a concrete application of graphs. It is applicable in any mathematics course which plans to include graphs of linear equations but presumes that the students have already been introduced to graphing ordered pairs.

- Students collect examples of graphs of sales or cost of products from newspapers and weekly news magazines over some time interval. These graphs serve to aid students in constructing graphs from the data they will collect.

Activity #28

During one class period discuss the role of a "buyer."

For example,

- A buyer is a person who is responsible for purchasing goods for a business. Every wholesale and retail business and large agency (including school departments) has either official or unofficial buyers. For example, in a large department store there may be a buyer for each department; in a small retail store the owner usually purchases all of the goods to be sold.

You can also invite a purchasing agent to speak to the class on buying. Contacts can be made through:

- a student whose parent or relative is a buyer, owns a business, or is employed in a business or agency which has a designated or unofficial buyer; or through
- large department stores and companies.

If necessary, the school's purchasing agent can speak to the class.

Class breaks into small discussion groups. Tell the members of each group to choose a business that interests them as a group, such as clothing, farm machinery, or food, and then to formulate a set of questions for the interview.

During the following week and a half each group interviews at least one "buyer" in the business it has chosen. Sample questions students can ask follow:

1. What factors are considered by a buyer when he or she is purchasing goods?
2. How are graphs useful and important for buying and selling?
3. How does one become a buyer? What skills are needed – especially in the area of mathematics? Must buyers be "wheeler-dealers" and aggressive?
4. What mathematical principles does a buyer use?
5. What data does a buyer have that would be useful to the students for graphing linear equations? Such data would include the number of items bought and sold over some specified time period or the change in price of an item over time.

Students must be careful to obtain such data; without it, they will be unable to engage in the mathematics part of the activity.

Provide students with the following example of what kinds of data to collect before they conduct their interviews. (See next page)

Students conduct interviews and in their small groups develop graphs relating to data collected. Act as a consultant to the different groups during the one-and-one-half week period on a regular basis, giving special attention to the type of data collected. Groups then report their findings to the class and discuss the following types of questions with regard to their graphs.

1. What is the advantage of putting data in graphic form?
2. What predictions can a buyer make for next year's purchases based on the graphs?
3. Assuming the graphs of the number of items sold cannot be changed, how would a buyer like to change the shape of the graph of the number of items bought? Why?
4. Assuming the graph of the number of items bought cannot be changed, how would a buyer like to change the shape of the graph of the number of items sold? Why?

(Example:)

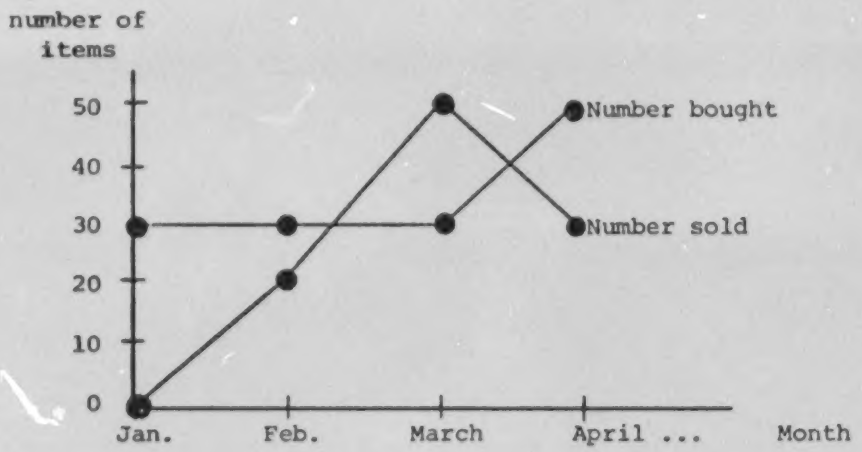
The following data was collected during an interview with a buyer in a department store regarding one item in the store.

Month	# Items Bought
Jan.	30
Feb.	30
March	30
April	50

Month	# Items Sold
Jan.	0
Feb.	20
March	50
April	30

Ordered pairs can be developed from this data and graphed.

Items bought--(Jan.,30), (Feb.,30), (March,30), (April,50)
Items sold-- (Jan.,0), Feb.,20), (March,50), (April,30)



Activity #28

Presentations also include:

- a description of what a buyer does;
- discussions of skills a buyer needs and what kinds of personalities may be attracted to this occupation;
- list of advantages and disadvantages of being a buyer;
- discussion of why people become buyers;
- presentation of data found;
- actual and hypothetical graphs relating to the business person interviewed;
- how graphs are useful and important in relating buying and selling.

Useful Prior and Subsequent Activities:

Students can do an independent study of the stock market, graphing the change in stock prices over time.

Resources:

Filmstrips: "It's an Exciting Career," J.C. Penney Co., Inc.
Educational and Consumer Relations
1301 Avenue of the Americas
New York, New York 10019

"Careers in the Department Store,"
State Department of Vocational and Technical Education
Curriculum and Instructional Meterials Center
1515 West 6th Avenue
Stillwater, Oklahoma 74074

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Fence builder
- Fencing contractor

MATHEMATICS RELEVANCE:

- Algebra
- Geometry
- Arithmetic
- Area
- Perimeter
- Graphing
- Inverse variation
- Algorithms
- Multiplication

Activity #29

Subject Area:

Mathematics

DON'T FENCE ME IN!

Capsule Activity Description:

Students listen to people whose jobs involve fence building and then do calculations related to the mathematics concepts used in barrier construction.

Teaching Prerequisites:

materials needed: graph paper, rulers
contacts with community: visits by people who build fences as part of their work
approximate preparation time: 1 - 2 hours
approximate class time: 1 - 2 classes

Mathematics Objectives:

to understand the concept of area and perimeter;
to learn the mathematical concepts involved in fence building;
to learn how to graph first and second degree equations.

ACTIVITY

This activity can be integrated into your mathematics class at several points during the year, but most easily and appropriately when the concepts of perimeter and area are introduced, when linear equations or second degree equations are being graphed, or when inverse variation is being introduced.

Invite a skilled fence builder to speak to the class. Contacts can be made through either a student whose parent knows a fence builder or by telephoning a large fence company found in the telephone directory. Supply the speaker in advance with the questions students will be asking.

Students can ask the guest speaker the following types of questions:

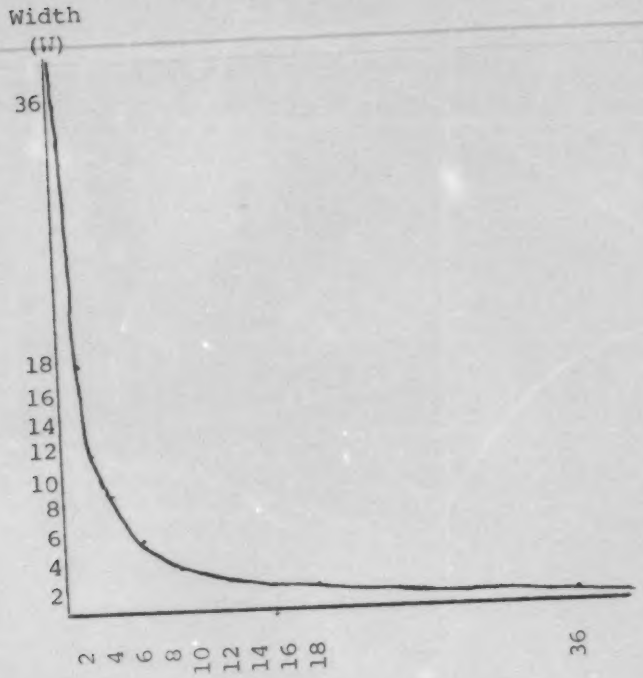
1. Where did you learn the skill of fence building?

2. How is fence building an integral part of construction work? of farming?
3. What equipment does one need to stake out a fence (e.g., axe, bank blade, tape, flags, flagpole, stakes, string, level)?
4. How is this equipment used? What hazards and difficulties are involved?
5. How does one stake out a fence line in:
   a. Heavy brush and undergrowth?
   b. Open fields?
   c. Open rolling or hilly areas?
   d. With the contour of the land?
6. What mathematical principles (algebraic and geometric) are involved in staking out a fence line on a straight or curved surface?
7. What are some different types of fences (e.g., electric, barbed wire, board, snake, cyclone, brick, picket, stone)?
8. What are the advantages and disadvantages of each of these different kinds of barriers?
9. What is the current cost for constructing the different types of fences?
10. Is it satisfying to be working outdoors and with your hands? Do you have problems with the weather?
11. Is employment in your job seasonal? If so, what do you do during the "off" season?
12. Does your job require physical strength?
13. Are you and do you have to be a union member?

After the interview with the fence builder, ask the students to draw on a sheet of graph paper at least three different rectangles with an equivalent area. Students then calculate the perimeter of each rectangle and the cost required to fence in the area of each rectangle. For example:

- Students draw at least three different rectangles whose area is 36 square units. Some possible dimensions are 1 x 36, 4 x 9, and 6 x 6. The respective perimeters are 74 units, 26 units, and 24 units. If one unit is equal to one foot and assuming the cost of a four foot chain fence is $4.40/foot the respective costs are $325.60, $114.40, and $105.60. The following questions may be raised:
  1. If a rectangular area to be fenced in (such as 36 sq. ft.) remains constant, what are the possible combinations of lengths and widths that can be used?
  2. What is the largest perimeter that will enclose this rectangular area?
  3. What is the smallest perimeter that will enclose this rectangular area?
  4. What is the largest cost of a fence that will enclose this rectangular area?
  5. What is the smallest cost of a fence that will enclose this rectangular area?
  6. What type of rectangle will always provide you with the smallest perimeter and smallest cost?
  7. What happens to the length of the perimeter as the length of one side of the rectangle becomes smaller and smaller?

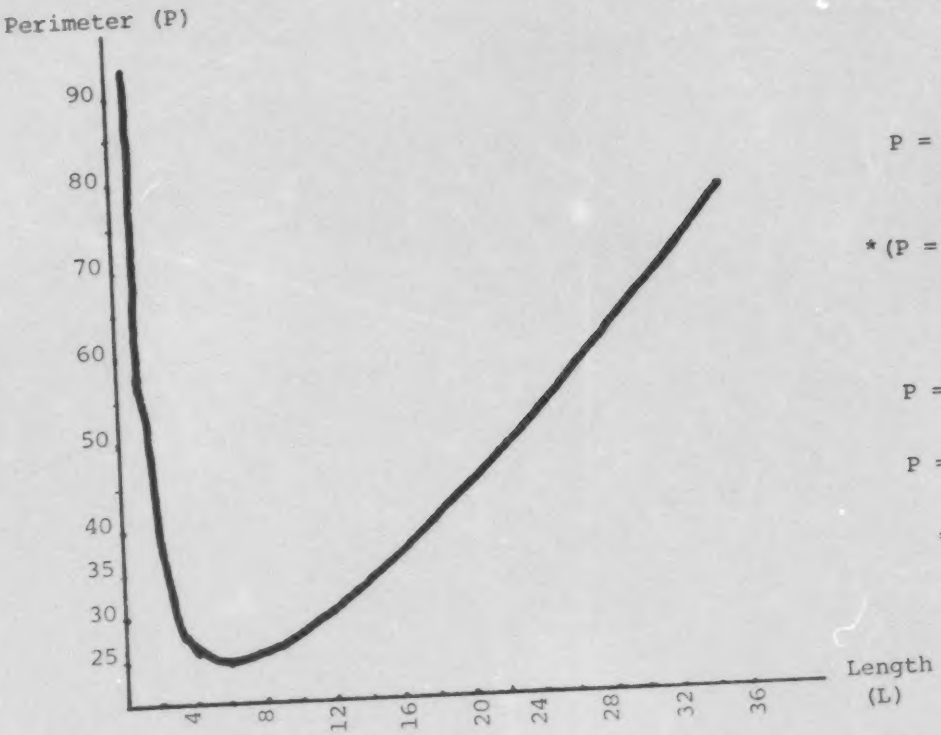
It may be desirable to construct graphs, such as those illustrated on the next page, of the various relationships that exist between the length and width of a rectangle, between the length of one side of the rectangle and the perimeter, and the length of one side of the rectangle and the cost of fencing in the rectangular area. This will provide examples of graphs of second degree equations.



A = 36 sq. units

L x W = 36

L	W
1	36
2	18
3	12
4	9
6	6
.	.
.	.
.	.



$$P = \frac{72 + 2L^2}{L} \quad *$$

*($P = 2L + 2W$ but $L \times W = 36$

$\therefore W = \frac{36}{L}$

$P = 2L + 2(\frac{36}{L})$

$P = 2L + \frac{72}{L}$

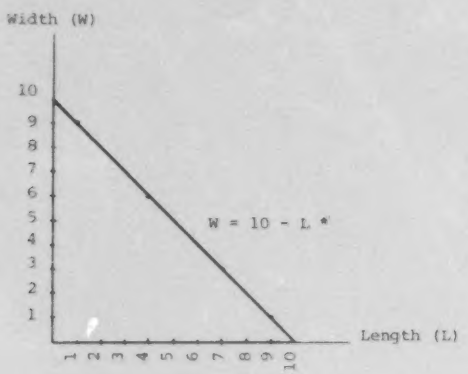
$= \frac{2L^2 + 72}{L}$)

Activity #29

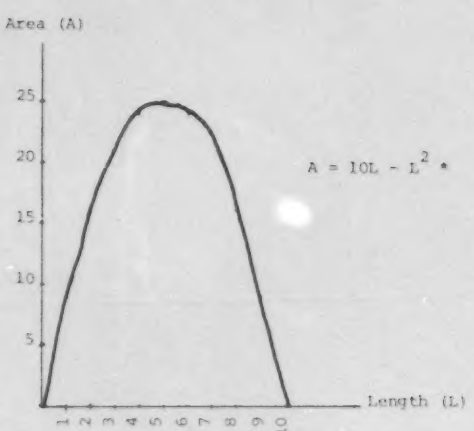
Students now draw at least three different rectangles, but ones whose perimeters remain constant. For example:

- Students draw at least three different rectangles whose perimeters are all 20 units. Some possible dimensions are 1 x 9, 4 x 6, and 5 x 5. Then raise the following questions:
  1. If the perimeter of a rectangular area remains constant, what is the largest area that can be enclosed by a fence?
  2. If the perimeter of a rectangular area remains constant, what is the smallest area that can be enclosed by a fence?
  3. Is the cost of the fence dependent upon the area enclosed?

Graphs of the relationships involved here, as illustrated below, can also be developed to provide examples of graphs of linear and second degree equations.



* if Perimeter = 20 units
$2W + 2L = 20$
$W + L = 20$
$W = 10 - L$



* $W = 10 - L$
$A = W \times L$
$= (10 - L)L$
$A = 10L - L^2$

Following these mathematical computations, conduct a follow-up discussion in which you ask:

1. How many and what kinds of mathematical skills and formulas are involved in building a fence?
2. Does it seem like building fences as a living would be an interesting occupation?
3. What are the advantages, personal satisfactions, and handicaps of a job which involves outdoor work and/or physical labor? Might people be attracted to or discouraged from this kind of job because it provides outdoors work and/or physical labor?
4. What kinds of physical skills are needed to be a fence builder? How can one learn them?

Useful Prior and Subsequent Activities:

- Students can volunteer to help build a real fence or build one experimentally on a vacant lot or field.
- Students can make a map, model, or diagram of staking out fences in at least one of these four areas:
  - Heavy brush
  - Open fields
  - Hill country
  - Along the contour of the land
- Students can make maps or diagrams to scale. For each fence students specify:
  - Type of fence
  - Height
  - Total length
  - Cost of building this barrier

Comments From Teachers and Students After Using the Activity:

Activity #30

Subject Area:

Mathematics

FIGURING OUT YOUR HEALTH

OCCUPATIONAL FOCUS:

- Health careers
- Public welfare careers

MATHEMATICS RELEVANCE:

- Statistics
- Averaging
- Mean, median
- Percent

Capsule Activity Description:

Students visit health facilities to study how their statistics are recorded and then discuss how these statistics are obtained and used to improve community health.

Teaching Prerequisites:

materials needed: none
contacts with community: visiting health, family, or public welfare clinics
approximate preparation time: ½ - 1 hour
approximate class time: 1½ - 3 classes

Mathematics Objectives:

to develop skills in working with percents and averages.

ACTIVITY

This activity provides students with realistic and practical examples of how statistical concepts learned in the classroom are used by health facilities in their community. At the same time it promotes student awareness of various occupations in fields related to Health, Family, and Public Welfare.

This activity is best integrated into a mathematics course when the concept of averaging or other related statistical concepts are presented.

Divide the class into small groups and ask each group to choose a health facility which deals with health, family or public welfare, such as:

- eye
- ear
- lead poisoning
- birth control

- veterinary
- research clinic (heart, cancer, etc.)
- smoking
- abortion
- venereal disease
- alcoholism
- visiting nurse association

Monitor the selection of health facilities to avoid duplication. Addresses for the clinics are available from your local city or town hall, hospitals, and the telephone directory. Contacts can probably be made through the school nurse, doctor, psychiatrist or psychologist, and guidance department. If interviews prove impossible, invite several health facility professionals, including statisticians, to class to discuss their careers and use of statistics.

In setting up their interviews, students request that if possible a clinic statistician be available for questioning.

Before conducting the interviews, each group develops a list of questions to ask about careers in the health field and about how statistics are used by health facilities. Sample questions follow.

Students contact the clinic to arrange an interview, stressing the need to conduct the interview when the statistician is available. If this site visit is not possible, have students use the telephone and research reference sources. Research questions include:

- How does this clinic help society?
- What diseases does it treat?
- Who is affected by these diseases?
- What types of information does the clinic collect?
- Why does the clinic collect this information?
- Why present this information in terms of statistics?
- How can statistics help in disease prevention and treatment?
- How do statistics help to trace the spread of contagious diseases? What are epidemic proportions?
- How can statistics be misused? Can you give an example?
- What tasks do statisticians perform? Are these enjoyable?
- What training do statisticians need and where do they get it?
- Why do people want to become statisticians?

After the interviews have been completed, there are a number of follow-up activities you can engage in.

1. Discuss the ways in which the health facilities collected their data and the uses to which they put their statistics.
2. Discuss whether any of the facilities appear to be misusing statistics. Ask the class how, in general, statistics can be misused. Why did someone once say, "There are liars, damned liars, and statisticians!"? Ask students to think of some statements involving statistics which are misleading. Ask them to identify examples from television advertising.
3. Discuss what the job of a statistician is like. What motivates people to want to become statisticians? What skills are needed? How are they learned?
4. Use information gathered by the students to reinforce your mathematics objectives. For example, if a chart is obtained from a health clinic or hospital showing the average height and/or weight of a person at various ages, then have the class calculate the average height and/or weight of the class, or, if desirable, the height and/or weight of a family member. Raise the following types of questions:

1. How does the class average compare with data from the chart?
2. How does each student's height and/or weight compare with data from the chart?
3. If my height and/or weight, as indicated by the chart, is near average, does this necessarily mean that I'm physically fit?
4. If my height and/or weight, as indicated by the chart, is **not** near average, is there something wrong with me?
5. How was the chart developed?
6. How important is the average?

5. Make comparisons between the use of statistics between different types of clinics. Are the uses the same? If not, why not? Also, encourage students to question the statistics presented by each other. This can be done by straightforward questioning or in a role play. For example:

   Student 1: "The average age of a person suffering from 'swimmer's ear' is 14."

   Student 2: "Oh yeah? How did you find that average? Besides, what meaning or usefulness does this statistic have?"

6. Students can role play situations in which a staff member from a health clinic presents statistical information at a press conference. Students assume roles of

   - staff members presenting statistics,
   - reporters who are questioning the statistics,
   - doctors and staff from the health clinic who support the statistics, and
   - concerned citizens attempting to understand the implications of the statistics.

Useful Prior and Subsequent Activities:

- Students can volunteer to work with statisticians as record keepers.
- Students can read the paperback book **How To Lie With Statistics,** by Darrell Huff, which identifies ways in which people in the community may be "lying" with statistics.

Resources:

American Hospital Association
840 North Lake Shore Drive
Chicago, Illinois 60611

American Medical Women's Association
1740 Broadway
New York, New York 10019

U.S. Public Health Service
Office of Public Inquiries
Bethesda, Maryland

Comments From Teachers and Students After Using the Activity:

Section Four: SCIENCE

1. ACTIVITIES SUMMARY

This section of the manual contains the following ten activities, sequenced very generally from easiest to most difficult.

31.* **JOB AID:** Students research cases in which first aid is needed and analyze the biological principles used in the first aid.

32. **TOILETS AND FUSES:** Students interview plumbers and electricians, then make designs and models of plumbing and electrical systems, and finally role play repair jobs and safety precautions.

33. **PICTURE-PERFECT JOBS:** Students research, explore and analyze the interrelationships of light, sound, electricity, chemistry and mechanics in audio-visual production by interviewing appropriate professionals in the field and constructing an experiment or display.

34. **REPAIRING ENGINES:** Students explore the mechanics and maintenance of internal combustion engines by interviewing people who repair them and then role playing common automobile engine repairs.

35. **DIGGING FOR JOBS:** Students research geological professions involving the extraction of natural resources from the earth's crust by interviewing or writing letters to persons in industries or government institutions involved in extraction of natural resources.

36. **A TREEFUL OF JOBS:** Students investigate the properties and uses of different types of wood by interviewing appropriate professionals who work with wood or wood products for their livelihood and role playing people involved in the life and uses of a tree.

37. **PREVENTING POLLUTION AND ENCOURAGING ECOLOGY:** Students examine and discuss chemical, biological, legal and social aspects of environmental pollution in their community by interviewing appropriate professionals in the field and by researching the effects of pollution in literature. Students then illustrate pollution and ecological principles by performing an ecology experiment.

38. **MINING FOR JOBS:** Students explore the relationships of geology and soil science to land-oriented industries such as farming, mining, construction, sanitation and waste disposal by interviewing appropriate professionals in the field. Students then conduct an experiment or construct a display which demonstrates this relationship to other members of the class.

39. **WORKING IN WATER:** Students research the role and uses of water in food production, transportation, recreation and conservation institutions in their own and neighboring communities.

40. **UNDERSTANDING BATTERIES:** Students research how a battery works, what it does, and how to service a battery by interviewing gas station mechanics.

* The activities in this section of the manual begin with number 31 because the numbering continues sequentially after the last activity (number 30) of the previous section on mathematics.

2. INTRODUCTION

As a junior high science teacher, you should consider career education as an integral and appropriate component of your teaching which will **increase your students' ability and motivation to learn science content and skills.** Moreover, as a science teacher, you are in a good position to integrate career education activities into your courses because you teach a variety of topics under the general rubric of science, including biology, geology, chemistry, physics, and mechanics.

How will the integration of career education activities into your science courses help you achieve your subject area objectives? There are at least two answers to this question.

1. While engaging in the career education activities provided in this manual, your students will learn a great deal about science **topics** related to the career or occupation they are studying. For example, if students interview people whose careers relate to wood (forestry, carpentry, lumber, etc.), the students are also going to learn a great deal about earth elements and plant life (general science). In short, learning about careers in science automatically involves learning about science **subject matter.**
2. By including career education activities in your courses, you will increase your students' **motivation** to study and learn about science topics and develop related skills. By studying careers related to science in exciting action-oriented ways, students will be stimulated to delve further into the field related to the occupations they are investigating. For example, students who study electrical wiring as a career by interviewing electricians will probably want to learn more about the science of electricity. In this manner, career topics have the attractiveness of **"relevance"** for studying and learning science content matter and skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected, as well as the involved student who wants to know what science has to do with the world of an adult: "Can studying the nature of the atom get me a job?" is the unspoken query of many students today.

How can integration of career education with science operate in practice? Let us look at a hypothetical Sample Week's Lesson Plans to see how you can integrate career education activities into your science courses.

3. SAMPLE WEEK'S LESSON PLANS

The week's lesson plans on the following page could be included in a junior high school life science or biology class. The lesson plans presume that students already have a basic knowledge of the human body functions and an awareness of where and how these functions can fail during an injury. The week specifically pertains to first aid and to a study of occupations in which a person is required at some time to use his or her knowledge of first aid, such as police officers, fire fighters, hospital staff, poison controllers, armed services personnel, coast guard members, and so on.

This science teacher has decided to integrate Activity 31 on first aid into his or her lesson plans. Students research cases in which first aid is needed and describe the biological principles behind these first aid techniques. A Red Cross volunteer gives basic first aid instruction and some of the more important techniques of first aid to the students. The students then teach first aid awareness to younger children. Groups of students are assigned to contact various local public service centers for typical first aid cases, as well as the employees' training, salary and benefits and the dangers to which they are exposed during emergency situations. Students also find out which household accidents occur most frequently and how much first aid an average person should know.

The activity makes students aware of a variety of occupations in which first aid is essential, which is a **career education objective.** It also involves a study of the human body in relationship to the body's physiological reactions to injury and trauma, and thereby addresses a **science objective** at the same time.

SAMPLE WEEK'S LESSON PLANS

(An illustration of one way to integrate a career education activity into your course.)

HOMEWORK ASSIGNMENT	DESCRIPTION OF CLASS ACTIVITY
Students read chapter in textbook on first aid and make a list of all the professions that they can think of where knowledge of first aid is necessary.	• Class discuss basic first aid treatments, stressing the importance of providing reassurance and sending someone for help, as well as providing bodily treatment. • Small groups represent various service occupations such as police, fire fighters, and hospitals, and list the most common disorders and treatment required in each particular occupation. (Activity #31)
Students telephone assigned public service centers to find out information on first aid training required, most common accidents encountered, and dangers involved in the work. Non-emergency numbers should be used.	• Visit a police station, fire department or hospital or invite one of their employees to class as a guest speaker to describe the role of first aid training in his or her job.
Students look up the technique of giving artificial respiration in a first aid book which is several years old and compare the method with those techniques used in modern first aid books.	• Volunteer Red Cross person discusses and demonstrates old and new techniques of artificial respiration and explains when and where people might require on-the-job first aid treatment • Small groups of students practice modern techniques of artificial respiration.
Students arrange for volunteer work giving first aid awareness training to younger children. Students also read chapters in their textbook dealing with the normal respiratory, circulatory and skeletal systems.	• Red Cross volunteer discusses and demonstrates first aid techniques used for external bleeding and broken bones. • Students practice bandaging and bleeding stoppage treatment.
Students give simple first aid awareness training to younger children after school.	• Red Cross volunteer discusses and demonstrates treatment for shock and explains occupations in which this medical emergency would most commonly occur. Volunteer describes first aid techniques, such as burn treatment, induced vomiting for poisoning, heart stimulation, childbirth, and emergency tracheotomy.

4. CROSS REFERENCE

The cross reference below identifies by number activities which treat particular occupational issues and jobs (listed across the top of the page) and activities which reinforce specific science topics and skills (listed down the left-hand margin of the page). By using the reference you can locate activities by specific jobs or occupational issues which you may want to teach or by particular science topics and skills which you feel are relevant points in your curriculum at which to introduce a study of careers.

SCIENCE

CROSS REFERENCE

TOPIC OR SKILL \ OCCUPATIONAL FOCUS	Agronomist	Appliance Salesperson	Audio-Visual Technician	Auto Mechanic	Boat Repairman	Broadcast Technician	City Manager	Construction Worker	Ecologist	Electrician	Engineer	Farmer	Fire Fighter	Fisherman/ Clammer	Forest Ranger	Geologist	Life Guard	Marine Biologist	Media Engineer	Medical Paraprofessional	Meteorologist	Miner	Mineralogist	Nurse	Nurse's Aide	Oceanographer	Photographer	Plumber	Police Officer	Sanitation Engineer	Seismologist	X-Ray Technician
Biology				39		37				37 38	38	31		36 37	38	31	37 39		31	37	38			31	39			31	39	38		
Chemistry		33	33	40		33	37			37				37			37	33		37						33					33	
Combustion				34																												
Conservation Ecology					39		37			37 38	38			36 37	38		37 39			37	38				39				39	38		
Earth Science	35				39		37		35	37 38	38			37	35 38		37 39			37	38	35			39				39	38		
Electricity		33	33	34 40		33			32									33								33	32				33	
General Science	35			34 40	39				35	32				36	35		39					35			39		32		39			
Geology	35								35		38	38			35 38						38	35								38		
Health													31			31			31					31				31				
Human Body													31			31			31					31				31				
Hydrodynamics									32																	32						
Light		33	33			33												33								33					33	
Marine Biology/Limnology					39												39								39				39			
Mechanics		33	33	34		33												33								33					33	
Mineralogy	35								35						35							35										
Natural Science					39					38	38				38		39				38				39				39	38		
Oceanography					39												39								39				39			
Photography		33	33			33												33								33					33	
Physical Science				34	39												39								39				39			
Physics		33	33	40		33			32									33								33	32				33	
Sound		33	33			33												33								33					33	

OCCUPATIONAL FOCUS:

- Medical Paraprofession
- Fire Fighter
- Nurse
- Police Officer
- Red Cross Volunteer
- Lifeguard
- Nurse's Aide

SCIENCE RELEVANCE:

- Biology
- Human Body
- Health

Activity #31

Subject Area:

Science

JOB AID

Capsule Activity Description:

Students research cases in which first aid is needed and analyze the biological principles used in the first aid.

Teaching Prerequisites:

materials needed: none
contacts with community: invite Red Cross volunteer or school nurse to class as a guest speaker.
approximate teacher preparation time: 1 - 3 hours
approximate class time: 2 - 4 classes

Science Objectives:

to learn the importance and techniques of first aid necessary in times of emergency bodily injury; to understand how various public service organizations handle first aid problems; to practice first aid techniques by teaching first aid awareness to younger children or other students.

ACTIVITY

This activity has three parts: students (1) interview workers at public service agencies to determine what kinds of accidents occur which require first aid; (2) invite a Red Cross volunteer or nurse to class to explain how first aid is administered; and (3) role play providing first aid to "injured" and "sick" people.

The class breaks into small groups. Each group is responsible for identifying and contacting a different public service agency to visit. Possible agencies include police departments, fire stations, poison control centers, hospital emergency wards, and Coast Guard stations. Students can arrange for their visits and interviews by enlisting the assistance of their parents, the school nurse, doctor, or guidance department, or walking into one of the agencies and inquiring whether it would be interested in setting a date and time for a small group field trip followed by interviews.

Activity #31

Before visiting its agency each group designs a list of questions it wants to ask. These questions focus primarily on identifying (1) the types of accidents and illnesses which require first aid, (2) where and how they occur, and (3) what the occupations of people who provide first aid are like. Sample questions follow.

1. Where do your employees learn first aid?
2. How do people learn to act efficiently and coolly in emergency situations?
3. To what dangers are these people exposed?
4. What first aid techniques should the average person know?
5. What are common causes of accidents in the home? at work? on the street?
6. How significant a part does first aid play in your job? How often do you have to provide it?
7. Do you find providing first aid makes you nervous? Do you enjoy excitement? Do you feel gratified at having been of significant assistance to someone? Do you enjoy helping people? Why?
8. Have you ever made a mistake in providing first aid? How did you feel afterwards?
9. How much do you have to know about how the body works in order to be able to provide first aid?

After conducting its interviews each group reports its findings to the class and compares results. As a result of the interviews the class develops an additional set of questions to pose to a Red Cross volunteer or nurse whom the students invite to talk with the class. This second set of questions concentrates less on the types of accidents that require first aid and the nature of careers related to treating them and more on (1) the methods of providing first aid and (2) the biological principles behind these methods. For example, students can ask for demonstrations of:

- artificial respiration
- care for someone in shock
- providing for someone with a broken bone or back
- stopping the bleeding from a deep cut
- responding to an unconscious person
- inducing vomiting in a poisoning case
- relieving someone who is choking
- treating frostbite
- responding to an epileptic fit
- remedying heat prostration

Students can formulate questions such as the following to ask:

1. When should these techniques be used?
2. Who should use them?
3. What dangers are involved in using them?
4. What legal risks does a "good Samaritan" run by providing first aid?
5. Where can the average citizen receive training in first aid?
6. What special measures are needed in a disaster situation like a hurricane, tornado, or flood?

Finally, students formulate questions designed to reveal the biological issues and processes behind the application of first aid. Sample questions can include:

1. Why does frostbite occur? Is it reversible? Why?
2. Why do people faint?

3. What causes epileptic seizures?
4. How much blood can the body afford to lose? Why is blood so necessary?
5. How do broken bones, torn ligaments, and sprains heal?

Following the visit by the Red Cross volunteer or nurse, students, using the regular classroom resources in first aid but perhaps with the technical assistance of the school nurse, simulate proper first aid responses to different accidents and illnesses. Examples of injuries or accidents that can be role played include:

- minor bleeding
- profuse bleeding
- heat prostration
- frostbite
- broken bones
- sprains
- pulled muscles
- spine injuries
- vomiting
- migraine
- pinched nerve
- limb crushed by a heavy object
- poisoning
- skin irritation
- foreign matter in the eyes, nose or throat
- choking
- internal injuries

Another role play approach is to assign role profiles to students who must then, without practice, act them out immediately. This approach is more realistic in terms of replicating the actual mental and physical quickness someone must exhibit during a real medical emergency. Sample role profiles for a first aid "dispenser" and an injured "employee" follow.

- Sample Injured Employee Role Profile

You work on a lathe in the Lumpy Lanolin Lubricating Company (known locally as "The Three L's"). You have just put a deep cut in your left arm between the elbow and the shoulder. A co-worker has just rushed you to the first aid station where the first aid dispenser is looking anxiously at all the blood you're trailing into his/her office. You say to the first aid person, "Do something quick! I can't stop bleeding!"

- Sample Co-Worker Role Profile

You work on a lathe in the Lumpy Lanolin Lubricating Company. The worker right next to you has just put a deep cut in his left arm above the elbow. You rushed over and have just helped him into the first aid station where the first aid person is looking anxiously at the blood all over the floor. You haven't even noticed the blood all over you in your nervousness.

- Sample First Aid Person Role Profile

You are the first aid dispenser in the Lumpy Lanolin Lubricating Company. Many of the workers here use dangerous equipment, including high speed lathes. In fact, you have just looked up from reading the January issue of **Frostbite in the Factory** and there is a worker holding another worker who is bleeding terribly from the left arm above the elbow. What do you do?

Activity #31

Follow-up discussion after the role plays can center on what first aid techniques were used, whether they were appropriate, how the accident or illness could be prevented or reduced in the future, and how the persons providing the first aid felt while administering it.

Useful Prior and Subsequent Activities:

- Students can set up a first aid awareness program after school to teach peers or younger students simple first aid skills.
- Students can engage in volunteer work as first aid assistants in hospitals and clinics and for the Red Cross.
- Students can study occupational health hazards such as lung disease, cancer, deafness, and blindness.
- Students can visit industries or farms to research occupational injuries and first aid techniques used to treat injured employees. (See Activity #45.)

Resources:

Students and teachers can refer to the following books:

First Aid. The American Red Cross, Doubleday and Company (New York: 1973). Paperback.

Eleven Blue Men. Berton Roueche. Berkeley (New York: 1953). Paperback. Good case histories and first aid problems.

Students and teachers can write to the following organizations for further information:

American Medical Association
535 North Dearborn Street
Chicago, Illinois 60610

American National Red Cross
National Headquarters
17th and D Streets, N.W.
Washington, D.C. 20006

U.S. Public Health Service
Office of Public Inquiries
Bethesda, Maryland 20034

Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250

ANA – NLN Nursing Careers Program
American Nurses Association
10 Columbus Circle
New York, New York 10019

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Plumber
- Electrician
- Appliance Repairperson

SCIENCE RELEVANCE:

- General Science
- Electricity
- Hydrodynamics
- Physics

Activity #32

Subject Area:

Science

TOILETS AND FUSES

Capsule Activity Description:

Students interview plumbers and electricians, then make designs and models of plumbing and electric systems, and finally role play repair jobs and safety precautions.

Teaching Prerequisites:

materials needed: none
contacts with community: interview with plumbers and electricians
approximate teacher preparation time: 1 - 3 hours
approximate class time: 2 - 3 classes

Science Objectives:

to learn about the nature and uses of electricity and hydrodynamics; to learn about the hazards and safety precautions of an electrical system; to learn basic trouble-shooting in plumbing and electrical systems; to apply what they have learned about electrical and plumbing systems to design a one-room house.

ACTIVITY

In this activity, the class splits into two groups. One group researches plumbing as a career and as it illustrates the use of scientific principles; the other group researches electricity.

The activity has three parts: students (1) interview plumbers and electricians; (2) observe electrical and plumbing systems; and (3) design their own wiring or plumbing system.

Part One: Interviews

Begin by soliciting student interest in one of these two fields. Divide the class into two groups based on the interests expressed. Provide the two groups with following instructions:

1. Identify a plumber or electrician, preferably several, whom you can interview. You can arrange for the interviews through your parents, if they have had occasion to use a plumber or electrician; by using the telephone book, including the Yellow Pages; and by asking the school plumber or electrician to talk with you and to identify other plumbers and electricians who will be interested in talking with you.
2. Develop a set of questions you want to ask the people you interview. Be sure to ask them both about the scientific principles involved in plumbing and electrical work and what the jobs of plumber and electrician are like. Some examples of questions you can ask follow.
   a. Why did you decide to become a plumber (electrician)?
   b. What skills do you need and where did you learn them?
   c. Do you have to be a union member to work in this field? How do you become one? What does the union do for you? Does it discriminate against women or minorities?
   d. Do you enjoy working with your hands? Are there any special dangers in your work? Are you likely to be called at any hour of the day or night? Are you paid double-time when this happens?
   e. How much do you have to know about scientific principles to be a successful plumber (electrician)? What are the major principles that make a plumbing (electrical) system work?
   f. What kind of tools do you use? What are they used for?
   g. What safety precautions must you practice?
   h. When you are called in to solve a problem, how do you go about "diagnosing" what is wrong? Is this part of the fun in your job – figuring out what the problem is and what the solution must be? Or is most of what you do pretty routine?
   i. What are a fuse, circuit breaker, time delay fuse? What do amps, watts, volts, groundings, and resistance mean?
   j. How do drains, toilets, and showers work? How do you find a leak? How do you decide what piping material to use? What are the advantages and disadvantages of copper? How do drains become clogged?

Part Two: Observations

After the groups have divided up responsibility for conducting the interviews and have held them, instruct them to observe the wiring or plumbing system in three separate locations: their home, in school, and in a public building. Each student develops a list, based on his or her observations, of safety defects and safety precautions identified and also records any unusual features. Warn students to make their observations with the next part of the activity in mind.

The two groups then reform and present the results of their interviews and of the observations to the other group.

Part Three: Wiring and Plumbing Designs

The two large groups now break into smaller groups, and each group designs its own wiring or plumbing system for a one-room house or illustrates diagrammatically a common plumbing or electrical problem. Examples of designs and problems include:

- a toilet, illustrating the principles of hydrology
- the wiring to an electric water heater, from fuse box to heater

- the process and results of a fuse blowing
- a circuit breaker overloading
- the effects of pipes and drains clogging

When they have completed their work, each group presents its design to the rest of the class and responds to questions and comments. Each group also indicates what skills were needed to create the design or what skills would be needed to solve the problem illustrated.

Useful Prior and Subsequent Activities:

Students can ask plumbers and electricians if they, the students, can spend an afternoon or evening on the job with them as observers.

Resources:

Students and teachers can write to the following for further information:

National Appliance and Radio - TV Dealers Association
318 West Randolph Street
Chicago, Illinois 60606

International Brotherhood of Electrical Workers
1200 15th Street N.W.
Washington, D.C. 20005

National Association of Plumbing-Heating-Cooling Contractors
1016 20th Street, N.W.
Washington, D.C. 20036

United Association of Journeymen and Apprentices of Plumbing
and Pipefitting Industry of the United States and Canada
901 Massachusetts Avenue, N.W.
Washington, D.C. 20001

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Broadcast Technician
- Audiovisual Technician
- Photographer
- X-ray Technician
- Media Engineer
- Television Technical Director
- Television, Radio Camera Repairperson
- Film Camera Operator

SCIENCE RELEVANCE:

- Sound
- Electricity
- Light
- Chemistry
- Mechanics
- Physics
- Photography

Activity #33

Subject Area:

Science

PICTURE-PERFECT JOBS

Capsule Activity Description:

Students research, explore and analyze the interrelationships of light, sound, electricity, chemistry and mechanics in audiovisual production by interviewing appropriate professionals in the field and constructing an experiment or display.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with professionals in careers relating to science, to audiovisual production
approximate preparation time: 2 - 4 hours
approximate class time: maximum 1 - 3 classes

Science Objectives:

to learn the interrelationships of light, sound, electricity, chemistry, and mechanics to the production of audiovisual materials; to better understand the role of science in media and communication; to explore the history and scientific development of audiovisual materials; to use audiovisual techniques to communicate this knowledge to others.

ACTIVITY

In this activity students present a science and career fair whose exhibits emphasize the role of science in audiovisual production.

Each student selects an audiovisual area which he or she wants to research from among the options provided later in this activity. The class then breaks into small groups around these common areas of interest. Each group begins the activity by determining how it plans to conduct its research so it can develop a science exhibit for the fair. Research methods the groups can utilize include:

- visiting retail and wholesale stores which sell or repair audiovisual products and interviewing the personnel;

- visiting locations where audiovisual materials and products are on display or used, such as museums, libraries, audiovisual centers, movie houses, television and radio stations, hospitals, and photography darkrooms;
- visiting industrial sites where audiovisual equipment and components are manufactured;
- interviewing members of associations and unions whose membership consists of broadcasters, audiovisual technicians, photographers, and other professionals in audiovisual fields; and
- reading appropriate literature in libraries.

Addresses for several appropriate resources are included in the Resources section at the end of the activity.

While the questions suggested below for students to research relate to the **scientific** aspects of audiovisual fields, instruct students to also research **career-related** issues in each audiovisual area, including such questions as:

1. What jobs are there in this particular audiovisual field and what tasks do they involve?
2. What skills are involved in these jobs and where does a person obtain them?
3. What motivates people to seek these jobs? Are people attracted by the glamour associated with them? by the type of people (actors, actresses, etc.) they work with? by the opportunity to meet interesting people? by the involvement of scientific principles and experimentation? by the salary? by the chance to apply creativity and exercise initiative?
4. Are people attracted to audiovisual fields because many people in the field seem to be "liberal," "liberated," "off-beat," "individualistic" and, in general, independent thinking and acting persons? Do these stereotypes have any validity? Do people become more "liberal" after entering the profession rather than bringing their alleged "liberalism" to their work?
5. How dependent are professionals in audiovisual fields on being union members? What do they do to join and what services does the union provide them? Does the union discriminate in any way against new members?

After conducting their research, students report back to their small groups to share what they learned and to develop their exhibits. Instruct students to:

- relate their projects to careers in their field of study;
- make projects clear and simple;
- make projects which several other students can see or experience at the same time;
- emphasize in their projects **science** principles, such as chemistry, electricity, mechanics, and sound, and not just audiovisual materials and processes;
- suggest that with appropriate projects students can plan a role play for the class in which they simulate the audiovisual action involved (e.g., filming a movie, X-raying a patient, editing a filmstrip, repairing a television).

For the science/career fair itself, set up the experiments and displays in different areas of the classroom. If possible, use a double-size classroom or study hall so that the experiments and displays do not have to be dismantled after the class. Encourage other classes to visit and your students to explain their projects to all comers.

The following are suggestions for research areas in audiovisual fields. You may want groups of students to combine two or more of them (e.g., numbers 1 and 3) or break them down into more discrete units of study (e.g., break down number 8, film production, into camera, lights and sound).

1. **The Development of Photography**
   a. How would a museum curator present this project?
   b. Who were early pioneers in still photography?
   c. What were some precursors of the camera? (Examples: camera obscura, pin-hole camera)
   d. What mechanical processes were involved? What chemical processes?
   e. Who were some famous early photographers?
   f. What techniques did the early pioneers in photography use in their laboratory work?

2. **The Development of Cinema**
   a. How would a professor present a dynamic, visually stimulating introduction to the cinema?
   b. What are some early examples of cinema? (Example: magic lantern)
   c. What mechanical principles were involved in developing the cinema?
   d. How did discoveries in electricity influence technical developments in the cinema?
   e. When and how was sound integrated into motion pictures? Why did it take so long to accomplish?

3. **Current Photographic and Film Research**
   a. What are some of the latest film videotape and photography developments?
   b. What chemical, mechanical and/or electrical processes are involved?
   c. How does work with videotape differ from work with motion picture film?

4. **Television, Radio, Camera Repair, etc.**
   a. How does one train to be a television (radio, etc.) repair person?
   b. What mechanics, electricity, etc. are involved in television repair?
   c. How does a television work? What makes a television picture? (Students may wish to take apart old radios and televisions and then reconstruct them. **Warning:** Don't have students plug in their experimental appliances until a mechanic has checked them for safety.)

5. **X-Ray Technician**
   a. How are X-rays different from regular photography?
   b. What are the major mechanical, electrical, and chemical principles involved in X-raying?
   c. How does one develop X-rays?
   d. How does one read X-rays?

6. **Radio Technicians**
   a. What do radio engineers and transmitters do?
   b. How do sound waves carry sound?
   c. How has space travel affected radio communication? How will this change the radio industry?
   d. How are radio waves different from sound waves?

7. **Film Equipment: Research and Repair**
   a. What mechanical principles are involved in a camera?
   b. Ask for diagram of the working of a photography company's camera. How does this camera work?
   c. Ask for a catalog of all equipment this company carries.

8. **Film Production**
   a. What jobs are available in motion picture productions?
   b. What chemical, mechanical, and electrical principles are involved in the roles of camera operator, assistant camera operator, electrician or "goffer," sound technician, etc?

9. **Television Production – Video Tape**
   a. How does video tape work? What chemical, mechanical, and other scientific principles are involved?
   b. How do the camera operator and lighting electrician work together?
   c. How is video tape different from film?
   d. What are some of the latest developments in video tape? How will these developments affect jobs in the television industry?
   e. What happens in the television control room?
   f. What does a television technical director do?
   g. How are television signals transmitted and received?

10. **Photography Development: Still**
   a. What training is needed to learn how to develop pictures?
   b. What chemical processes are involved? What are the functions of the different chemicals?
   c. How does one retouch photos?
   d. What light and filter processes are involved?

11. **Film Development Lab**
   a. What chemical processes are involved in color matching?
   b. What is an answer print? What are rushes?
   c. What special effects can be done in the film lab?

Useful Prior and Subsequent Activities:

- Students can do volunteer or apprentice work in an audiovisual field, helping a photographer, X-ray technician in a hospital, or television or radio repair person.
- Students can create an audiovisual product in school or after school, such as a movie, filmstrip, tape recording, photographic essay, or videotape.

Resources:

National Association of Photo Equipment Technicians
1240 Mt. Oliver Road N.E.
Washington, D.C. 20002

Master Photo Dealers' and Finishers' Association
603 Lansing Avenue
Jackson, Michigan 49202

Biological Photographic Association, Inc.
P.O. Box 1057
Rochester, Minnesota 55901

National Association of Photographic Manufacturers
600 Mamaroneck Avenue
Harrison, New York 10528

Professional, Commercial, and Industrial Markets Division
Eastman Kodak Company
Rochester, New York 14650

National Association of Broadcasters
1771 N. Street N.W.
Washington, D.C. 20006

WGBH-TV
125 Western Avenue
Allston, Massachusetts 02134

Polaroid Corporation
730 Main Street
Cambridge, Massachusetts 02139

Yellow Ball Workshop (film)
62 Tarball Avenue
Lexington, Massachusetts 02173

International Alliance of Theatrical and Stage Employees
1270 Avenue of the Americas
New York, New York 10020

Professional Photographers of America
1090 Executive Way
Oak Leaf Commons
Des Plaines, Illinois 60018

National Association of Broadcast Employees and Technicians
135 West 50th Street
New York, New York 10019

National Alliance of Television and Electronic Service Associations
5906 South Troy Street
Chicago, Illinois 60624

National Broadcasting Company
30 Rockefeller Plaza
New York, New York 10020

Students can read:

The History of Photography. Beaumont Newhall: The Museum of Modern Art (New York: 1964). Paperback.

Life Library of Photography. Time-Life Books (New York: 1971). Hardbound series. Useful examples: **The Camera, The Print, Light and Film, Photography as a Tool, The Studio, Photographing Nature** and **The Great Photographers.**

Photography. Eric de Mare, Penguin Books (Baltimore: 1970). Paperback. Comprehensive review of all aspects of the field.

Film: "Cameras and Careers," Eastman Kodak Company, Audio-Visual Service, 343 State Street, Rochester, New York 14650.

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Engine Mechanic
- Auto Mechanic

SCIENCE RELEVANCE

- Physical Science
- Mechanics
- Electricity
- Combustion
- General Science

Activity #34

Subject Area:

Science

REPAIRING ENGINES

Capsule Activity Description:

Students explore the mechanics and maintenance of internal combustion engines by interviewing people who repair them and then role playing common automobile engine repairs.

Teaching Prerequisites:

materials needed: diagrams of a 4-stroke cycle internal combustion engine and wankel engine; examples of small broken and/or functioning engines (optional)
contacts with community: interviews with professionals who repair internal combustion engines
approximate preparation time: 2 - 3 hours
approximate class time: 1 - 3 classes

Science Objectives:

to learn the mechanics, operation, and maintenance requirements of internal combustion engines;
to learn how important internal combustion engines are to modern industrial society.

ACTIVITY

Ask students to:

1. Observe internal combustion engines in their neighborhood. Examples include motor cycles, automobiles, small tractors, mowers, snow blowers, chain saws, generators, snowmobiles, outboard motors, and sump pumps.
2. Learn where these engines can be repaired by consulting:
   - their owners
   - manufacturers
   - distributors
   - Yellow Pages of the telephone book
   - school vocational students and teachers

The class then breaks into small groups to research the basic principles of a four-stroke cycle internal combustion engine. Research methods can include:

- using library books
- borrowing operator's or owner's manuals from owners and distributors of the machines; and
- interviewing vocational students in the school and vocational teachers.

If possible, each group brings a diagram of the engine it has researched to class. Each group also comes to class prepared to define the following terms:

- vertical, horizontal, and multi-position crankshaft
- cycle, stroke
- intake, compression, power, exhaust
- piston, valve, cylinder, cam, spark plug.

After this initial research, each group develops a list of questions to ask someone in the community who repairs internal combustion engines. Sample questions follow.

1. How do engines vary from machine to machine?
2. What are the most common repair jobs? How are they done? What causes these areas to break down?
3. What are some simple rules for maintaining an internal combustion engine in top running order?
4. What are the functions of and reasons for the various anti-pollution devices on engines?
5. How did you first become interested in engines?
6. How did you learn to repair them?
7. What qualifications or licenses does a person need to repair engines?
8. Do you find it enjoyable to work with your hands? Are there any special physical skills related to dexterity you need to repair engines? Could a "klutzy" person do the work?
9. Mechanics have often been accused of doing shoddy work, replacing parts with used parts instead of new ones, and charging for work not performed. Do you think this is true of some mechanics? If so, what can the consumer do to protect him or herself against such frauds?
10. Do you find the part of your job that involves diagnosing the malfunction and figuring out how to repair it – the "tricky" case – presents you with exciting challenges, do you find most of your work is pretty routine, or is there a combination of both?

Students can identify and contact mechanics who may be interested in being interviewed in the following ways:

- work through a parent, relative, or friend who has had to take an engine for repairs and therefore knows a mechanic;
- discuss possible interviewees with vocational-technical education students or teachers;
- consult the Yellow Pages for the addresses of conveniently located mechanics and visit one to request an appointment for an interview.

If it proves impossible to conduct interviews, one or more mechanics can be invited to class to respond to the groups' questions.

After conducting their research, students reform into their small groups, compare responses to their questions, and prepare a report for the class. In addition, each group prepares a brief role play involving a person bringing an engine in to a mechanic for repairs. The "customer" describes what is wrong with the machine and the "mechanic(s)" diagnoses the problem, indicates the repair needed, informs the customer of the likely cost, "makes" the repair, and instructs the customer on how to prevent similar malfunctions in the future. If possible, the group uses a real engine in the role play. Each group presents its report and role play to the class and responds to questions and comments. Follow-up discussion follows on one or more of the following issues:

1. What skills are needed to be a mechanic? How does one learn them?
2. What are the enjoyable and disagreeable aspects of repairing machines for a living?
3. What are the temptations to do the work dishonestly and how frequently do repair frauds probably occur? What can the consumer do to avoid being cheated?
4. What are the most common repairs needed on internal combustion engines, why do they occur, and are there ways in which they can be prevented?
5. What are the major scientific principles involved in the functioning of internal combustion engines?
6. Women mechanics are rarely seen. Why do few women enter the profession? Are women incapable of "working with their hands"? Would customers patronize a mechanic who was a woman? Would companies hire her? What could and should she do in both cases if the answers were no?

Useful Prior and Subsequent Activities:

- Students can take a field trip to a parking lot to look at and identify different automobile internal combustion engines. If possible, owners of cars should be informed of the activity in advance.

Resources:

Students and teachers can write to the following for more information:

Automotive Service Industry Association
230 North Michigan Avenue
Chicago, Illinois 60601

General Motors Corporation
General Motors Building
Detroit, Michigan 48202

Ford Motor Company
The American Road
Dearborn, Michigan 48121

American Motors Corporation
14250 Plymouth Road
Detroit, Michigan 48232

Diesel Engine Manufacturers Association
122 East 42nd Street
New York, New York 10017

International Harvester Company
401 North Michigan Avenue
Chicago, Illinois 60611

Students may also find the following books helpful:

Chilton's Auto Troubleshooting Guide. Edited by John D. Icelley. Chilton Book Co. (Radnor, Pennsylvania: 1974), paperback. Chilton also published larger and more specific repair manuals for all cars.

How to Keep Your Volkswagen Alive, A Manual of Step-by-Step Procedures for the Complete Idiot, John Muir and Tash Gregg, John Muir Publications (Santa Fe, New Mexico). Paperback, an excellent, easy to follow and use guide.

The Way Things Work: An Illustrated Encyclopedia of Technology. Simon and Schuster (New York: 1967). Hardbound. Good diagrams of internal combustion and Wankel engines.

The following game can prove helpful with this activity:

Smog. Urban Systems, Inc., 1218 Massachusetts Avenue, Cambridge, Mass. 02138

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Geologist
- Mineralogist
- Mining Engineer
- Drill Operator/Helper
- Field Foreman
- Soils Specialist
- Agronomist
- Ecologist

SCIENCE RELEVANCE:

- General Science
- Earth Science
- Geology
- Minerology

Activity #35

Subject Area:

Science

DIGGING FOR JOBS

Capsule Activity Description:

Students research geological professions involving the extraction of natural resources from the earth's crust. Students interview or write letters to persons in industries or government institutions involved in extraction of natural resources (optional). Students present this information to the class in the form of a report in which they use role playing.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with or letters to professionals involved in mining resources
approximate preparation time: 2 - 3 hours
approximate class time: 1 - 2½ classes (Approximately 4 weeks may be required to get responses from letters to various industries)

Science Objectives:

to learn the uses and values of different minerals and natural resources from the earth's crust; to learn the hazards, risks and economic benefits involved in the process of extracting these resources; to understand the limited nature of these resources and the increasing costs for mineral exploration as more resources are used.

ACTIVITY

Divide the class into 3 to 5 groups. Each group picks a natural resource which can be found in the United States and researches information about the resource it has chosen and occupations related to that resource. Sample research questions students can address include the following:

- How is it formed? (e.g., fossil fuel)
- With what other minerals can it be confused? (e.g., gold and iron pyrite)
- Where is this resource commonly found?
- What is it used for?
- How is it stored?
- How is this resource processed?

- How can the resource be located?
- How can the mined land be reclaimed?

Groups can visit and interview or write to a major firm which mines or drills the natural resource they will research. Students can inquire about:

- What techniques are used to locate the resource;
- How the resource is extracted (e.g., strip mining, shaft mining, drilling);
- How the land is reclaimed after the extraction of the resource;
- What the various jobs are involved in the extraction process (see box at top of previous page for examples);
- What the functions of these jobs are;
- Why people enter these occupations;
- If women are discouraged from entering these occupations and discriminated against if they do;
- How and where these people are trained;
- Whether the firm also processes the material it extracts;
- If so, how; if not, where and how the material is sent;
- What the federal regulations are concerning this type of mining and drilling; and
- Whether the company follows these rules.

Students can identify companies to visit and staff to interview by telephoning resources. Students can write to these sources for answers to their research questions in addition to or instead of arranging for a field trip. A sample letter students can develop for this latter purpose follows.

A. Student
Kennedy High School, Room 36
200 School Street
Hartford, Indiana 87654

Mobil Oil Corporation
150 East 42nd Street
New York, New York 10017

Dear Recipient:

I am studying the extraction processes of different natural resources in my earth science class and would appreciate any information that you could give me on:

1. How Mobil Oil discovers the location of petroleum,
2. How the petroleum is extracted from different areas,
3. How the petroleum is refined and processed,
4. The different petroleum products produced by Mobil Oil,
5. Areas of special research emphasis at Mobil Oil,
6. How the land from which the resources are taken is reclaimed and environmental pollution is minimized,

7. What federal regulations apply to your mining and refining,
8. The different occupations involved in petroleum mining and refining.

I look forward to your response to the inquiry.

Sincerely,

In class, students should give reports on the natural resources they researched explaining how they are located and mined. Presentations can be in the form of role plays showing what happens to the resources from discovery to ultimate use and land reclamation.

Follow-up discussion can concentrate on one or more of the following issues:

- Should resources be mined or drilled when such extraction methods destroy the environment? Should strip mining be allowed, for example, or off-shore drilling?
- How do people end up selecting these jobs and training for them?
- Is there discrimination against women or minorities in any of the occupations related to geology and mining? If so, why does it exist and how should a woman or minority person react to it?
- What are some of the health dangers associated with these occupations? How serious are they? Should they be considered in selecting these jobs as an occupation?
- What are some of the advantages to being employed in these occupations?
- How would you diagram the process of extraction for each of the resources you researched?
- What are the uses of each of these resources and can any of them be substituted for each other? Why are some preferable to others in terms of transportability, efficiency, pollution, and potential for multiple uses?

Useful Prior and Subsequent Activities:

- Students can demonstrate how pieces of mining equipment relate to the laws of physics and how geophysical principles are used in the location of the resources.
- Class can focus on those natural resources which provide energy, including sunlight, and research the advantages and disadvantages of each resource.

Resources:

Students and teachers can write to the following for further information.

American Geological Institute
2201 M Street, N.W.
Washington, D.C. 20037

Society of Exploratory Geophysicists
P.O. Box 3098
Tulsa, Oklahoma 74101

American Geophysical Union
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037

Soil Conservation Service
U.S. Department of Agriculture
14th Street and Independence Avenue, S.W.
Washington, D.C. 20250

The Metallurgical Society of the American
Institute of Mining, Metallurgical and
Petroleum Engineers
345 East 47th Street
New York, New York 10017

National Science Foundation
Division of Environmental Sciences
1800 G Street, N.W.
Washington, D.C. 20550

Exxon Corporation
1251 Avenue of the Americas
New York, New York 10020

Mobil Oil Corporation
150 East 42nd Street
New York, New York 10003

Shell Oil Company
P.O. Box 2463
Houston, Texas 77001

The following game can be helpful in this exercise: **The Planet Management Game** (Houghton Mifflin Company, Boston).

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Forest Ranger
- Conservationist
- Lumberjack
- Tree Surgeon/Farmer
- Plant Nursery Operator
- Carpenter
- Architect
- Newspaper Press Operator

SCIENCE RELEVANCE:

- General Science
- Biology
- Botany
- Ecology
- Conservation

Activity #36

Subject Area:

Science

A TREEFUL OF JOBS

Capsule Activity Description:

Students investigate the properties and uses of different types of wood by interviewing appropriate professionals who work with wood or wood products for their livelihood and role playing people involved in the life and uses of a tree.

Teaching Prerequisites:

materials needed: sections of different types of wood (optional) and paper products (optional)
contacts with community: interviews with forest rangers, lumberjacks, carpenters, architects, paper recyclers, newspaper press operators and other professionals who use wood or wood products
approximate preparation time: 3 - 4 hours
approximate class time: 1½ - 4 classes

Science Objectives:

to learn the structures and functions of plant tissues to plants; to learn how plant tissues are used by man; to understand the limitations of forests resources and the importance of conservation and reforestation; to learn how machines are used to transform wood into useful products.

ACTIVITY

Students break into six groups based on their particular interests in the following fields related to wood products. Each group conducts appropriate interviews and seeks answers to science and career education questions such as those provided below.

Group I: Trees in Their Natural State

Students visit national or state parks or a state forest. If a visit is not possible, students may write for the information. Students arrange to visit forest rangers, ecologists, conservationists, fire fighters, plant nursery operators, and so on.

Students ask questions about any aspect of forestry as an occupation and how it relates to the science areas of ecology, botany, biology, and conservation. Sample questions include:

1. Where and how they were trained (on job, off job)?
2. Where does the nature of their work require them to live?
3. How does the work affect their life styles?
4. What hazards are involved in the job?
5. What special skills or strengths are needed?
6. What kinds of special satisfactions or drawbacks are there to working outdoors, with nature, and with one's hands?
7. Are there times when compromises must be made bewteen ecological and conservation considerations, on one hand, and financial, political, or business considerations on the other?
8. What is a state forest? Why do we have them?
9. What are the stages of growth that a forest goes through? Why is the beech tree usually found in a climax forest?
10. How do diseases threaten the forest?
11. How do animals in the woods threaten trees? (e.g., deer eating bark off trees in the winter.)
12. Fire fighting:
    - What equipment is used? How does it work?
    - What hours does one work?
    - What are salary and insurance benefits?
    - What are the dangers in forest firefighting?
13. How do severe forest fires affect the ecology in the immediate area and in distant areas? (e.g., how do forest fires cause flooding?)
14. How can people plant forests to change their environment?
15. Who employs ecologists? (e.g., government, consumer groups, private industry, universities, housing developers.)

Before leaving the park students pick up or make a list of all job positions in this and other parks, including as many job specifications as possible, such as training, salary, retirement, and other benefits.

If no forests, rangers, or conservationists are available in your particular area, students can use libraries to research the information and/or write to government agencies (e.g., Forest Service of the U.S. Department of Agriculture or the National Park Service) or to private forest industries, such as St. Regis and Weyerhauser and use the information received in a class discussion following the above questions as a guideline. If appropriate facilities are not convenient for any of the other groups' activities described below, they too can use libraries and/or write to agencies and companies instead. (See Resources.)

Group II: Cutting and Transporting Trees

This group of students visits a lumber camp. If this is not feasible, students can write to a large lumbering company to see how the business is run. A large lumbering yard can also be substituted here in place of a lumber camp, if no camps are nearby. Questions students can ask include:

1. What is a lumber camp like?
    - Do people live in the camp or in nearby towns?
    - If they live in camp, what are living conditions like?
    - What hours do the men work?
    - What salary and benefits do the people work for?

2. Is there discrimination against women and/or minorities? Could women handle the physical work required? Are there non-physical supervisory positions for which they could qualify?
3. What jobs ("foreman," chain saw operator, ecologist, etc.) are available in the lumbering industry?
4. What equipment is used? How does it work? How safe is this equipment?
5. Does the lumbering industry plan for reforestation? If so, how? (e.g., seed trees, replanting, skimming the forest rather than cutting everything.) If not, why not?
6. How are trees selected for cutting – by size? number per acre? quality? age?
7. How is the lumber transported? River? Trucking? Helicopter? What jobs are involved in transporting the cut trees? What are the special problems of moving logs? (e.g., size, jams in river.)

Group III: Saw Mill – Making Trees into Lumber

This group of students visits a saw mill. A lumber yard may be substituted for a saw mill if no mills are available. Group III may be combined with Group II if your location has limited resources.

Students can ask the following types of questions.

1. What jobs are available? (e.g., foreman, saw operator.)
2. What training and background is necessary for these jobs?
3. How does the equipment work? What are the operating hazards?
4. Are different trees cut in different ways?
5. What varieties of trees are sawed here? Where do they come from?
6. How are all parts of the tree used? Sawdust? Are any parts wasted?
7. How is wood stored? Are there fire hazards or aging problems?
8. What are costs? of lumber? equipment? logs?

Group IV: Carpentry-Furniture

This small group makes a list of as many different kinds of carpentry linked with furniture as they can, such as wood joint (no nail) carpenters, cabinet makers, furniture factory employees, sculptors, etc.

Students in this group split up and visit as many different kinds of carpenters as are accessible. They can identify and contact appropriate carpenters to interview through school purchasing agents, parents who have hired carpenters for home repairs, local hardware stores, unions, and the Yellow Pages. Local unions can be found in the telephone directory under "Carpenters Local Union."

Students can start their interview by asking questions such as the following:

1. Where did you learn to be a carpenter? Apprentice? Self-taught? Grade school? Special training program? Is it difficult to get jobs if you're not a union member? Is it difficult to become a union member? Does the union discriminate against women and/or minorities?
2. How do you get jobs? Shop employee? Union? Custom designing?
3. What kinds of wood do you work with? How does one work with different kinds of lumber? How do different types of wood differ?
4. What equipment do you use? How does it work? Do all carpenters use this equipment?

5. Where does a carpenter buy his wood? How does forest ecology affect him?
6. What do you like about your job? What don't you like?

Group V: Carpentry-Building

Students in this group visit an architect and a wood frame building site.

Students ask both the architect and the builders about their jobs, including such questions as:

1. Where were you trained?
2. How do you find jobs in your field? Is the work seasonal?
3. What are benefits and hazards in your occupation?
4. What are the advantages and disadvantages of using wood as a building material?
5. What are the advantages and disadvantages of using particular types of wood for different purposes?

Students can also ask the architect and the builders the following types of questions and compare how the perspective of each type of person on the same problem varies.

1. What considerations must one have in mind in designing a house?
2. How does one choose the kind of wood with which to build?
3. How should one take the environment into account when building in a given area? (e.g., preserving existing trees, contour of the land.)
4. How does forest ecology affect home building?

Group VI: Paper Making

Students in this group visit a paper mill. Students make a list of all jobs related to paper making and describe the function of each of these jobs. Students observe the step-by-step process of paper making. Whenever possible, students ask how the equipment works and what training is necessary to operate it. Newspaper printing plants can be substituted for paper mills if no paper is manufactured in your area, or students can write to a paper mill.

Students may also want to learn:

1. How are different grades of paper made?
2. Where do the raw materials come from? (e.g., recycling, sawdust, logs.)
3. How does forest ecology affect the paper making industry?
4. Is this paper mill involved in any ecology projects?

Useful Prior and Subsequent Activities:

- Students role play people involved with the life and uses of a tree. (How many famous actors started by playing "a tree" in their school play?) Students start with the tree as a seedling and trace its growth, cutting, and milling. Then pupils examine its uses as furniture, homes, and paper. Involve all of the individuals of the groups in the role plays. Students can bring in as much relevant data on jobs as possible. For example: "I'm Jill Carver, ecologist. I planted this tree as a seedling in Michigan in 1935. I planted the tree as part of a reforestation project which I designed. It was the fourth such project I designed . . . ." "I'm Ranger Evans. I used a branch of this tree to wave to a rescue party when I was trapped in a snow drift . . . "

- Students can refinish an old piece of wooden furniture to bring out the natural qualities of the wood.
- Students can make paper from different materials, such as grass, nasturtiums, iris or vines by:
  1. Macerating the material to be used in the paper into an even suspension of fiber (an equal amount of old paper can be macerated with the other materials to make a better quality paper);
  2. Spreading a thin layer of fiber suspension evenly on a wire mesh screen and allowing water to drain away;
  3. Turning the screen upside-down on a piece of wool felt and gently working screen away from paper;
  4. Covering paper with another piece of felt;
  5. Continuing to stack paper and felt on top of each other;
  6. Applying heavy press or pressure to top of pile until the paper is dry.
- Students can read Paul Bunyan stories or Ken Kesey's novel about lumberjacks, **Sometimes a Great Notion.**
- Students can visit a house or museum that has examples of antique furniture.
- Students can design a piece of furniture of their own, developing a rationale for why they have selected a particular type or types of wood for their product (e.g., durability, inexpensiveness, etc.).
- Students can do volunteer work in a reforestation or other ecology project.

Resources:

Students and teachers can write to the following for further information:

Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250

Society of American Foresters
1010 16th Street, N.W.
Washington, D.C. 20036

American Forest Institute
1835 K Street, N.W.
Washington, D.C. 20006

Society of Wood Science and Technology
P.O. Box 5062
Madison, Wisconsin 53705

Forest Farmers Association
4 Executive Park East N.E.
Atlanta, Georgia 30329

Forest Owners, Inc.
P.O. Box 295
Yazoo City, Mississippi 39194

Activity #36

National Forest Products Association
1619 Massachusetts Avenue, N.W.
Washington, D.C. 20036

United Brotherhood of Carpenters and Joiners of America
101 Constitution Avenue, N.W.
Washington, D.C. 20001

National Park Service
Department of the Interior
Washington, D.C. 20240

American Pulpwood Association
605 Third Avenue
New York, New York 10016

American Paper Institute
260 Madison Avenue
New York, New York 10016

St. Regis Paper Company
150 East 42nd Street
New York, New York 10017

Students and teachers can read and use the following: **Sometimes a Great Notion,** by Ken Kesey. (Bantam Books, New York: 1964, paperback).

The following game can be helpful with this activity: **The Redwood Controversy** (educational simulation game). (Houghton Mifflin, One Beacon Street, Boston, Mass.)

Comments From Teachers and Students After Using This Activity:

OCCUPATIONAL FOCUS:

- Forest Rangers
- Conservation Lawyers
- Government Ecologist
- State Highway Patrol Officer
- Marine Biologist/Limnologist
- City Manager
- Manager of Large Factory
- Sanitary Engineer
- Meteorologist

SCIENCE RELEVANCE:

- Biology
- Earth Science
- Chemistry
- Conservation Ecology

Activity #37

Subject Area:

Science

PREVENTING POLLUTION AND ENCOURAGING ECOLOGY

Capsule Activity Description:

Students examine and discuss chemical, biological, legal and social aspects of environmental pollution in their community by interviewing appropriate professionals in the field and by researching the effects of pollution in literature. Students then illustrate pollution and ecological principles by performing an ecology experiment.

Teaching Prerequisites:

materials: terrarium equipment (jars, soil, plants, etc.); feather, oil, Eduquip Gas Sampling Kit
contacts with community: interviews with people whose careers are related to environmental protection
approximate preparation time: 3 - 4 hours
approximate class time: 2 - 4 classes

Science Objectives:

to learn how certain chemical pollutants are produced, detected, and prevented; to learn various effects of different environmental pollutants on living organisms; to realize how a scientific understanding of the effects of environmental pollution is necessary in order to create better regulatory laws and reduction of the pollution.

ACTIVITY

In this activity, students research the effects of water and air pollution and become aware of occupations related to their control.

The class breaks into small groups. Each group is responsible for researching one area of pollution and the jobs associated with preventing or monitoring it and for then conducting an experiment related to the area it researched.

Groups begin by selecting an area of pollution they want to study. Examples of issues they can research follow.

1. What is mercury poisoning? How does it affect fish and people?
2. What do terms used in measuring air pollution really mean?
3. What are the acceptable levels of different pollutants in the air?
4. What biological harm (diseases) can air pollution cause?
5. What harm and diseases can polluted water cause?
6. What happens in an unbalanced aquatic environment?
7. What meteorological and chemical conditions are necessary to produce smog?
8. How do weather and geography affect air and water pollution?
9. What government air and water pollution controls are there for factories, individuals, cars, sanitation dumps, etc.?
10. How are waste products disposed of or recycled?

Having identified their area of research, and after you have verified that it is a feasible topic to study, each group identifies methods by which to research its topic. Possible sources of information include:

- newspapers
- periodicals
- scientific reports
- government research centers
- libraries
- local environmental agencies and public interest groups

The latter two resources may be the most fruitful in terms of both accessibility (willingness to grant interviews and tours) and informativeness. All the groups can attempt to utilize both. Specific agencies and individual students can visit and interview the staff in include:

1. sewage disposal and waste treatment plants
2. environmental protection bureau or agency
3. consumer action groups
4. air pollution control center
5. pollution research facility in an automobile company
6. state park and state forest ecologists
7. pollution enforcement agencies
8. sanitary engineer
9. city manager
10. weather bureau
11. factory manager

If field trips and interviews are not feasible, you can invite several officials from the above agencies to class to respond to students' questions.

Each group, before visiting its site(s), develops a list of questions to ask. These questions revolve around the following issues:

1. What kinds of pollution do you deal with? What scientific information and skills do you need for dealing effectively with them?
2. What other information and skills do you need in your job? Where did you learn them?

3. If part of your job involves preventing, monitoring, and/or cleaning up after pollution, is this a frustrating task? What kinds of opposition do you meet and how do you respond? Does your job discourage you a lot? Do you feel gratification when you succeed?

After students have conducted their interviews and completed their other research, groups reform to share their results and prepare a report for the class explaining their findings. Class discussion follows the group reports and focuses on the issue areas suggested in the three interview questions above.

As a follow-up activity, each group conducts an ecology or pollution experiment related to their research. Examples of useful experiments follow.

1. Students observe the effects of car exhaust pollution on clothing.

Materials needed:
- iron
- ironing board
- nylon stockings
- 35mm photo slide holder
- slide projector

Students iron 1-½ inch squares of single mesh nylon (from old nylon stockings, not from stretch panty-hose type) in the middle of a "Readymount" 35 mm photo slide holder. Different slides of the same type should be placed in various locations where modes of transportation are common, such as: gasoline station garages, busy street corners, residential street corners, bus stations, airports, train depots, and a rural countryside. The slides should be labelled with the name of the school, student, location and data. After 10 days of "contamination" the slides are brought back into the classroom and projected onto a screen and "breaks" in the nylon can be counted and compared with an initial count. The slides can be taken back to their pollution sites and allowed to sit for another 10 days, if time allows. Results then may be presented in a table or graph.

Students then discuss the relative deterioration of nylon in the different areas and the role of transportation in creating air pollution.

Variations:

- slides may be placed directly "underneath" different cars, buses, etc. for a more specific study of the different modes of transportation.
- different thin, net materials may be tested.

2. Students observe particulate pollution from vehicles.

Materials needed:
- Vaseline
- microscope slide
- transparent metric ruler

Students coat a thin layer of Vaseline on one side of a microscope slide and hang or place the slide in various locations where different modes of transportation are common, such as: gasoline stations, bus/subway stations, train depots, busy street corners, residential street corners, airport, rural countryside, or simply outside of the classroom window or on the roof.

After 10 days the slides are examined under a microscope and the relative numbers of particles per square millimeter or per microscope field are counted and recorded. The number of square millimeters of a microscope field may be measured by placing a transparent metric rule under a microscope to measure the diameter of the field. The area of the field may then be computed by using the formula:

$$\text{Area} = \pi r^2$$

Students discuss the roles of automobiles, buses, etc. in releasing particulate matter into the air and possible health consequences and cleaning bills.

3. Students observe the effects of sunlight on gasoline.

Materials needed:
- ozone/ultra-violet lamp
- small clear box or cut-away shoe box and cellophane
- saucer
- tablespoon
- gasoline

Place an ozone/ultra-violet lamp inside a small clear box or a cut-away shoe box with a cellophane or plastic top along with a saucer with one tablespoon of gasoline. Turn on the ozone lamp and observe the following petrochemical reaction:

$$O_2 \longrightarrow O_3$$

$$O_3 + \text{gasoline} \longrightarrow \text{aerosol smog}$$

Students relate this reaction to the effect of the sun's ultra-violet rays on gasoline from motor vehicles.

Variations:

- The ozone lamp may be used to test the effects of ozone on rubber, such as pieces of automobile tire, over time.
- An induction coil producing a continuous spark may be used in place of the ozone lamp in experiments **NOT** involving flammable gasoline.

4. Students observe the effects of sulfur dioxide, emitted by car exhausts, on plant life.

Materials needed:
- two identical plants
- two large, wide-mouth jars
- 2 ml of 5% sulfuric acid
- 2 grams sodium sulfite

Students put two identical plants, such as geraniums, inside of two large (at least one gallon), wide-mouth jars which can be sealed airtight. Insert a small container with 2 ml. of 5% sulfuric acid (H_2SO_4) next to one of the plants in one of the jars. Carefully add 2 grams of sodium sulfite (Na_2SO_3) to the sulfuric acid and seal the top of the jar. Seal the second jar without adding any extra chemicals to the plant or jar. This will serve as a control. Observe and record the appearance of the plants before the experiment and each day for the next few days.

Students then discuss the causes and effects of sulfur dioxide pollution, in particular the effect of automobile exhaust on plant life. Class discusses how things that affect plants might also affect animals and human beings.

Variations:

- A large plastic bag may be used in place of the jar if all holes are sealed with tape and the opening of the bag is taped shut.
- Small animals could be tested instead of plants. Animals such as sowbugs, grasshoppers, earthworms, snails, frogs, and mice make good subjects.

5. Students test and observe the effects of gases commonly found in emissions from transportation vehicles on living and non-living materials.

   Materials needed:
   wide-mouth jars
   gases – sulfur dioxide, ozone, hydrocarbon, nitrogen dioxide
   See materials to be tested at end of experiment

   Students suspend or place objects inside of an air-tight test chamber in which gases such as sulfur dioxide (SO_2), ozone (O_3), hydrocarbon, nitrogen dioxide (NO_2), and carbon monoxide (CO) have been placed. The gases should **always** be introduced under a fume head to prevent harm to the students. These gases are available in cylinders from many chemical supply houses. The air-tight test chambers can be wide-mouth jars with good, reliable tops, glass aquaria, or bell jars. Gas concentrations may be controlled by using gas sampling detector tubes, such as Eduquip Gas Sampling Kit, available from various supply houses. Gas concentrations best tested in this study would be as follows:

   SO_2 = 1 ppm for 1 hour
   O_3 = 0.25 ppm for 30 minutes
   NO_2 = 0.25 ppm for 1 hour
   CO = 120 ppm for 1 hour
   Hydrocarbon = 90 ppm for 1 hour

   Materials to be tested in these test chambers:

   1. Metal Alloys – aluminum, copper, brass, silver, steel, zinc, etc.
   2. Rubber – tires, rubber bands
   3. Fabrics – cotton, wool, nylon, silk; dyed or undyed
   4. Paints, stains, varnishes
   5. Plants – onion, rose, lettuce, bean, clover, tomato, etc.
   6. Fungi – mushrooms, mold, yeast
   7. Animals – fruit flies, sow-bugs, earthworms, ants, etc.

Variations:

- Time and concentration of gases may be varied.
- Combinations of different gases may be tested.

6. Students determine the concentration of carbon monoxide in an area of high transportation vehicle density.

Activity #37

Materials needed:
detector tubes

Students sample and determine the concentration of carbon monoxide emissions in various areas such as: bus/subway stations, train depots, gasoline stations, busy street corners, quiet residential areas, rural countryside, and airports. Carbon monoxide detector tubes (e.g., Eduquip Gas Sampling Kit) are available from chemical supply houses. Samples of air are taken into the gas detector tubes and the specific concentration of gas is identified by a color change in the tube.

Students discuss and account for the variations observed in the different locations.

Variations:

- Sample emissions from automobiles with air pollution controls can be compared to those taken from cars without air pollution controls.
- Students can alter the idle speed of an automobile and test exhaust for carbon monoxide changes.

7. Students investigate the effect of gasoline or oil spills in fresh water plants and animals.

Materials needed:
10 gal. or larger aquarium
fresh water fish
plants
gasoline
motor oil

Students set up a 10-gallon or larger aquarium with various common fresh water fish (guppies, goldfish, etc.) and plants (Elodea, sea grass, algae, etc.). Then a few drops of gasoline are placed on the water, representing a spill from a power boat. Observations are made of any changes in normal growth and behavior patterns.

In another aquarium, or the same one at a later date, a few drops of motor oil are placed on the water. Observations and comparisons are made between various spills and their effects.

Variations:

- The "oil spill" could be made on a small lagoon in a lake and changes in plant and animal life could be noted by sampling at various intervals.
- Samples of plant and animal life could be taken from an area near a busy dock and compared with samples taken from another area where similar boat traffic occurs.

8. Students determine the oil absorption abilities of various materials.

Materials needed:
oil
water
one-square foot trays
hay
cloth
newspaper

paper towels
sponge
weighing scales

Students pour oil on top of water in trays of at least one-square foot surface area until the surface is just covered. Equal amounts of oil should be poured into equal size trays of water for each separate material to be tested. Students then try to absorb all of the oil using such materials as: hay, pieces of cloth sheets, newspaper, paper towels, sponge, and whatever other materials that they can think of. As much material should be added to the tray as is needed to absorb all of the oil. The material is then set aside and weighed to find out how much material was needed to absorb the oil. The weights and relative absorption abilities can then be compared. Results can be discussed in terms of difficulty in removing oil slicks from beaches and shore lines left by boats.

9. Students investigate the sound deadening characteristics of an automobile muffler.

Materials needed:
new automobile muffler
old automobile muffler
microphone (optional)
oscilloscope (optional)

Students produce a loud sound of a known and repeatable quality and pass this sound through a new muffler and an old, discarded muffler. The "muffled" sound is then compared with the original sound in both cases. A microphone connected to an oscilloscope can be used to compare the initial and final sounds quantitatively in each case.

Variations:

- The needle for volume on a good hi-fi amplifier or tape recorder can be used to compare relative sounds.
- A decibel-meter can be used to find out the exact intensities of the sounds.
- New and worn-out mufflers can be opened up to investigate muffler sound baffles.

10. Students compare noises produced by automobiles, buses, subways and other transportation vehicles.

Material needed:
decibel meter

Students directly measure the noise produced by an automobile pulling away from a curb and compare this noise to a bus pulling away from a curb, and a subway pulling away from its stop. The noise can be quantitatively measured using a decibel meter.

Students should discuss the relative amounts of noise produced by each mode of transportation and determine the amount of noise produced per person being transported. For example, if a bus can carry the same number of people as 30 automobiles, cars create the most noise pollution per passenger transported.

Variations:

- Students may record the sounds on tape and analyze them later on equipment in the school, such as an oscilloscope.

Activity #37

- Students can volunteer to clean up a polluted river or stream near the school. They can also offer their services to local ecological societies and groups.

Resources:

Students can write to the following for additional information:

Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250

Society of American Foresters
10-0 16th Street, N.W.
Washington, D.C. 20036

National Park Service
Department of Interior
Washington, D.C. 20001

American Meteorological Society
45 Beacon Street
Boston, Massachusetts 02108

American Bar Association
115 East 60th Street
Chicago, Illinois 60637

Water Pollution Control Federation
3900 Wisconsin Avenue
Washington, D.C. 20016

Interstate Conference on Water Problems
c/o Council of State Government
1735 DeSales Street, N.W.
Washington, D.C. 20036

Air Pollution Control Association
4400 Fifth Avenue
Pittsburgh, Pennsylvania 15213

Air Pollution Control Office
Office of the Commissioner
Parklawn Building
5600 Fishers Lane
Rockville, Maryland 20852

Citizens For Clean Air
502 Madison Avenue
New York, New York 10022

Environmental Protection Agency
Waterside Mall
4th and M Streets, S.W.
Washington, D.C. 20460

National Oceanic and Atmospheric Administration
Gramex Building
8060 13th Street
Silver Spring, Maryland 20910

Sierra Club
1050 Mills Tower
San Francisco, California 94104

Wilderness Society
729 15th Street, N.W.
Washington, D.C. 20005

Friends of the Earth
451 Pacific Avenue
San Francisco, California 94133

National Audubon Society
1130 Fifth Avenue
New York, New York 10038

Environmental Defense Fund
1901 N Street, N.W.
Washington, D.C. 20036

Conservation Foundation
1717 Massachusetts Avenue, N.W.
Washington, D.C. 20036

Center for the Study of Responsive Law
Box 19367
Washington, D.C. 20036

National Wildlife Federation
1412 16th Street, N.W.
Washington, D.C. 20036

The following games can be used along with this activity:

Dirty Water. Urban Systems, Inc. 1219 Massachusetts Avenue, Cambridge, Mass. 02138

Smog. Urban Systems, Inc. 1219 Massachusetts Avenue, Cambridge, Mass. 02138

The Pollution Game. Houghton Mifflin Co., One Beacon Street, Boston, Massachusetts 02107

The Planet Management Game. Houghton Mifflin Co., One Beacon Street, Boston, Massachusetts 02107

Pollution: Negotiating a Clean Environment. Instructional Development Corporation, Salem, Oregon 97304

Baldicer. John Knox Press, Richmond, Virginia 23209

The Eduquip Gas Sampling Kit can be obtained from:

Eduquip – Macalaster Corporation
1085 Commonwealth Avenue
Boston, Massachusetts 02215

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Geologist
- Farmer
- Sanitation Engineer
- Construction Worker
- Miner
- Landscape Architect
- Highway Engineer
- Seismologist

SCIENCE RELEVANCE:

- Earth Science
- Geology
- Natural Science
- Conservation Ecology
- Biology

Activity #38

Subject Area:

Science

MINING FOR JOBS

Capsule Activity Description:

Students explore the relationships of geology and soil science to land-oriented industries, such as farming, mining, construction, sanitation and waste disposal by interviewing appropriate professionals in the field. Students then conduct an experiment or construct a display which demonstrates this relationship to other members of the class.

Teaching Prerequisites:

materials needed: students supply necessary materials for display or experiment
contacts with community: interviews with professionals working in land-oriented industries
approximate preparation time: 1 - 3 hours
approximate class time: 2 - 4 classes

Science Objectives:

to learn the importance of and interrelationships between geology, soil science and land study to community services and production industries; to learn how construction and sanitation industries depend on stable geological conditions; to discover which components of soil are important for efficient farming and how and why these components are replaced to prevent overfarming of land; to learn the causes and prevention of soil erosion during flooding and in farming and construction industries.

ACTIVITY

The class breaks into eight small groups. Each group plans a visit to and interviews with people working in one of the following fields:

- sanitation
- house and building construction
- mining (prospecting geologist)
- farming
- land development
- flood control
- oil drilling
- seismology
- road construction

Activity #38

Students can identify and contact agencies and companies who are involved in these kinds of work and who may be interested in hosting tours and interviews through contacts with parents who work in or know people who work in one of these areas; through school administration officials who can identify companies with which the school does business (e.g., sanitation and construction); and by judicious use of the Yellow Pages of the telephone book. If one or more of the eight geological fields does not have a company in the community or the companies which are in the vicinity do not permit interviews, you can divide the class into fewer groups around those areas for which interviews can be arranged. You can also invite workers from these fields to class to answer questions from the class.

Each group develops a list of questions it wants to ask about the nature of the work in the company or agency and the scientific methods used. Sample questions follow.

1. What must one know about the structure of the earth below a site before one can construct a road? building? sewage system? levee? mine? well?
2. What is a fault zone? What causes earthquakes? How can they be prevented?
3. What problems can erosion cause? How are these difficulties avoided?
4. What effect does soil composition have on growth and nutritional value of a crop?
5. What is soil compost? How can a person make it?
6. What must people in each job position know about geology? What other scientific information do they need?
7. What training is required?
8. What similar jobs are available in these fields?
9. Why are people attracted to these jobs?

Each group then conducts its interviews. Following the field work, the groups make a display chart, diagram, or experiment illustrative of the geological principles and information they learned as a result of their interviews. Examples of demonstrations groups can present follow.

- Experiment showing the effects of different soils on a specific kind of fast growing grass.
- Display showing how a careless person can cause a forest fire and the effects fires can have.
- Chart composition of different soil types.
- Diagram of local sewage system.

Instruct the groups also to prepare a brief report which:

- includes a description of the scientific principles involved in the occupation researched;
- includes information on related jobs;
- focuses on why people take certain jobs – what they think they will like about them, including concern not only about the type of work involved and the salary, but also concerns about having job security, following in a parent's or role model's footsteps, being "desperate" for a job and taking the first opening available, having evenings and weekends free, avoiding or desiring a job that requires responsibility or initiative, or finding a job which offers the opportunity to exercise authority, leadership, or creativity.
- indicates what people find attractive and unattractive about these jobs; and
- details the skills required to perform them well.

Conclude the activity by conducting a follow-up discussion around these five topics.

Useful Prior and Subsequent Activities:

- Students can share their experiments, charts, or displays either in an "open house" session in which all experiments are shown at once or individually for selected "audiences."
- Students can collect rocks in the vicinity and relate them to local geologic history and to problems related to farming and construction of foundations or roads.
- Students can take field trips in the surrounding area to investigate the geological environment, such as prairies, glacial lakes, river basins, and earthquake fault zones. Students can also take field trips to or invite speakers to come to class from sewage disposal plants, farms practicing erosion prevention, road or building construction site offices, and city dumps.

Resources:

Students can write to the following for additional information:

The Metallurgical Society of the
American Institute of Mining,
Metallurgical and Petroleum Engineers
345 East 47th Street
New York, New York 10017

American Geological Institute
2201 M Street, N.W.
Washington, D.C. 20037

American Geophysical Union
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037

Society of Exploratory Geophysicists
P.O. Box 3098
Tulsa, Oklahoma 74101

National Science Foundation
Division of Environmental Sciences
1800 G Street, N.W.
Washington, D.C. 20550

Soil Conservation Service
U.S. Department of Agriculture
14th Street and Independence Avenue, S.W.
Washington, D.C. 20250

Associated General Contractors
of America, Inc.
1957 E Street, N.W.
Washington, D.C. 20006

American Society of Sanitary Engineering
228 Standard Building
Cleveland, Ohio 44018

American Road Builders Association
525 School Street, S.W.
Washington, D.C. 20024

Students can read:

"Opportunities in Geophysics." **Physics Today.** February 1971.

The following games can be useful in this activity:

The Planet Management Game. Houghton Mifflin, One Beacon Street, Boston, Mass. 02107

Baldicer. John Knox Press, Richmond, Virginia 23209

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Oceanographer
- Boat Construction Worker
- Water/Marine Sport Center Operator
- Fisherman/Clammer
- Sailor/Barge Operator
- Marine Biologist/Limnologist
- Off-shore Oil Well Operator
- Sanitation Engineer
- Navy, Coast Guard or Merchant Marine Enlistee

SCIENCE RELEVANCE:

- General Science
- Earth Science
- Natural Science
- Biology
- Oceanography
- Marine Biology/Limnology
- Conservation Ecology

Activity #39

Subject Area:

Science

WORKING IN WATER

Capsule Activity Description:

Students research the role and uses of water in food production, transportation, recreation and conservation institutions in their own and neighboring communities.

Teaching Prerequisites:

materials needed: none

contacts with community: interviews with professionals whose work involves the use of water resources in food, transportation, recreation and/or conservation institutions; writing letters to more distant water-related industries, resorts, chambers of commerce or government institutions.

approximate preparation time: 2 - 3 hours

approximate class time: 2 - 3 classes

Science Objectives:

to learn the involvement of various industries and institutions making heavy use of resources of water, lakes, rivers and oceans; to learn how the properties of water are controlled by these industries.

ACTIVITY

In this activity, small groups of students select an industry to research which is linked with water resources. Each group identifies the research methods it plans to use and the issues it wants to study. Example of both for different water-related areas of study resources follow.

1. **Shipbuilding,** including ships, barges, yachts, rowboats, and canoes.
   - Possible research methods:
     a. library materials
     b. letters to shipyards and/or ship salespersons
     c. visit to and interviews with employees of shipbuilding plant or boatyard
     d. visit to and interview with staff of maritime or history museum
     e. interviews with sailors and fisherwomen and fishermen

- Research topics:
  a. What ocean and water conditions must the ship be able to withstand? What causes shipwrecks? (Example: salt water and other chemical considerations, hurricanes, currents, sandbars, etc.)
  b. What are the traditional jobs in shipbuilding?
  c. How have these jobs changed as shipbuilding became more complicated?
  d. What are the current employment possibilities in shipbuilding? (Make a list of current jobs and requirements.)
  e. Where and how does a person learn to be a shipbuilder?

2. **Recreation**
   - Possible research methods:
     a. letters to ocean or waterfront resorts and sports centers such as beach resorts, boating resorts, scuba and helmet diving centers and marinas
     b. visits and interviews with staff of same
     c. interviews with staff of sports supply store and inspection of equipment
     d. interviews with officials in local government agency responsible for licensing recreational facilities and monitoring their health and safety standards
   - Suggested research topics:
     a. What are physical principles behind "riptides," longshore currents, sand bars, pressure and gas laws in diving?
     b. How do ocean conditions create hazards? Example: Rip tides in beach areas.
     c. What are some of the benefits and hazards of these sports? Example: Dangers in scuba diving (nitrogen narcosis, the bends, etc.)
     d. What are their job requirements? Example: lifeguard – life saving and water safety instructor.

3. **Navy and Coast Guard**
   - Possible research methods:
     a. letters requesting information
     b. interviews with local recruiting officers
     c. examining literature available from recruitment officers, the Pentagon, or school guidance office
     d. interviewing career military personnel
     e. touring a Navy or Coast Guard base
   - Suggested research topics:
     a. How is oceanography used to increase Navy and Coast Guard efficiency? Example: By knowing certain current flows, submarines can pass through the Straits of Gibraltar without using their engines. This allows them to enter the Meditteranean Sea without being detected.
     b. What types of oceanographic research is the Navy involved in?
     c. How has the Navy historically used scientific oceanographic principles?
     d. What jobs are available in some of these areas? Submarine sailing, patrol boat, aircraft carrier and destroyer, oceanographic research, etc.
     e. How is a person trained to fill these positions?

4. **Food Resources:** Fishing, beaches, cultivation, and new research
   - Possible research methods:
     a. field trip to a fishing center or village, lobster fishing village, lake fishing town, clamming and oyster areas
     b. letters to fish processing plant (e.g., tunafish canning factory)
     c. interview with staff of wholesale or retail fish stores
     d. library book
   - Suggested research topics:
     a. What jobs are involved in the fishing and seafood industries? (Examples: fisherman, bait suppliers, net builders)
     b. What must one know about the ocean, river or lakes to efficiently use them? (Examples: currents, waves, weather warnings, red tide)
     c. What should one know about fish in order to become a good fisherman? (Examples: eating habits, mating habits, conservation)
     d. What are some possible new food sources? (Example: seaweed)

5. **Mineral Resources**
   - Possible research methods:
     a. library sources
     b. letters to companies involved in extracting ocean mineral resources, such as oil companies
     c. visits to same
   - Suggested research topics:
     a. What principles of marine geology are involved in ocean mining and exploration? How must employees use these principles?
     b. What physical and chemical oceanographic principles affect the drilling process? (Examples: waves, salt water corrosion)
     c. What special equipment is used by this company? (Example: An oil company using "Flip" as a drilling base)
     d. What are the hazards of off-shore drilling and oil tanker transport?
     e. What training is required for the various positions? Where does one obtain these skills?

6. **Shipping**
   - Possible research methods:
     a. interviews with sailors
     b. field trips to ship docks
     c. interviews with members of maritime or longshoreman's union
     d. library resources
     e. interviews with officials in local government agency responsible for licensing and monitoring commercial fishing boats
   - Suggested research topics:
     a. How do weather and current affect shipping schedules and routes?
     b. What are some examples of hazards at sea?
     c. What are the oceanographic principles behind these dangers? How can they be minimized?

d. What special skills are needed by sailors? (Examples: navigation, radio operation, mechanical repair)
e. How are these skills linked with oceanography?
f. How does containerized shipping differ from other kinds of shipping?
g. What jobs are available on a ship at sea? In a containerized shipping firm or port?

7. **Oceanography**

- Possible research methods:
  a. library resources
  b. letters to oceanographic research centers, museums, aquaria, or university oceanographic departments
  c. visits to same and interviews with staff
- Suggested research topics:
  a. What are the duties of a marine biologist, a physical oceanographer, a chemical oceanographer, and a marine geologist?
  b. How do these fields overlap? How do they differ from fresh water fields?
  c. What are the main dangers involved in sea research?
  d. What jobs are available at this center and what backgrounds are required for these jobs?

8. **Sanitation-Conservation and Water Purification**

- Possible research methods:
  a. visit to fresh or salt water purification plant
  b. letters to same
- Suggested research topics:
  a. What types of pollutants and waste are dumped into water?
  b. What effects do these pollutants have on aquatic life?
  c. How can oil spills best be cleaned up and/or prevented?
  d. How is sewage water best treated to make it potable?
  e. How do lake and river wastes affect the oceans?
  f. What are the tasks done by professionals working in fields dealing with water conservation?
  g. What training is required to work in this field? Who provides the training?

Resources:

Students can write to or visit the following for additional information:

National Sporting Goods Association
717 North Michigan Avenue
Chicago, Illinois 60611

Bureau of Outdoor Recreation
U.S. Department of Interior
Washington, D.C. 20240

United States Department of Navy
The Pentagon
Washington, D.C. 20350

International Longshoreman's Association
I.L.A. –AFL-CIO
17 Battery Place
New York, New York 10004

Boating Industry Association
401 North Michigan Avenue
Chicago, Illinois 60611

American Boat and Yacht Council
15 East 26th Street
New York, New York 10010

National Oceanography Association
1900 L Street, N.W.
Washington, D.C. 20036

International Oceanographic Foundation
1 Rickenbacker Causeway
Virginia Key
Miami, Florida 33149

American Society of Sanitary Engineering
228 Standard Building
Cleveland, Ohio 44013

American WaterWorks Association
Two Park Avenue
New York, New York 10016

American Society of Limnology and Oceanography
W.K. Kellogg Biological Station
Michigan State University
Hickory Corners, Michigan 49060

United States Coast Guard
Coast Guard Headquarters
400 7th Street, N.W.
Washington, D.C. 20591

National Oceanic and Atmospheric Administration
Institute for Oceanography
Gramex Building
8060 13th Street
Silver Spring, Maryland 20910

Woods Hole Oceanographic Institute
Woods Hole, Massachusetts 02543

Scripps Institution of Oceanography
La Jolla, California 92038

Chamber of Commerce
Portland, Maine 04111

Chamber of Commerce
Brainerd, Minnesota 56401

Bureau of Sport Fisheries and Wildlife
U.S. Department of Interior
18th and C Streets, N.W.
Washington, D.C. 20240

Catfish Farmers of America
530 Tower Building
Little Rock, Arkansas 72201

U.S. Trout Farmers Association
67 West 9000 South
Sandy, Utah 84070

Students will also find the following magazines helpful:

1. **Oceans**
2. **Yachting**
3. **Sea Frontiers**
4. **Skin Diver**
5. **Surfer**

The following games can be helpful in this activity:

1. **Dirty Water.** Urban Systems, Inc., 1218 Massachusetts Avenue, Cambridge, Mass. 02138.
2. **The Planet Management Game.** Houghton Mifflin Co., One Beacon Street, Boston, Mass. 02107.

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Auto Mechanic

SCIENCE RELEVANCE:

- General Science
- Physics
- Chemistry
- Electricity

Activity #40

Subject Area:

Science

UNDERSTANDING BATTERIES

Capsule Activity Description:

Students research how a battery works, what it does, and how to service a battery by interviewing gas station mechanics.

Teaching Prerequisites:

materials needed: a discarded automobile battery, which can be taken apart (optional)
contacts with community: field trip to a gas station; interview with gas station mechanics after school
approximate preparation time: 2 - 4 hours
approximate class time: 1 - 2 classes

Science Objectives:

to learn the electrical and chemical properties and applications of the electrolyte in a wet cell battery; to learn how electrical charges are stored or discharged in batteries; to learn how to clean, check and maintain wet cell batteries; to learn reasons for proper safety precautions when working with charged wet cell batteries.

ACTIVITY

Students research the types of engines, machines and appliances that use dry cell and wet cell batteries in terms of how a battery works, what it does, and how it is maintained. Each group develops its own questions about batteries and careers related to battery manufacture, operation and maintenance that it wants answered by a mechanic.

Some possible research inquiries about batteries are:

1. What are the main functions of a battery?
2. How does a battery work with an engine? What must be done to start engines that lack batteries?
3. What are negative and positive plates?

4. What is the electrolyte in a wet cell? in a dry cell?
5. What is a cell? element? terminal?
6. What is the basic chemical action involved in a battery?
7. What is a charged condition? A discharged condition?
8. How does one clean a battery?
9. How does a person check battery charge?
10. What equipment is used in battery maintenance?
11. What are the advantages of a wet cell over a dry cell battery in an automobile?
12. How does battery maintenance affect the general performance of a car?

Some career related questions for the mechanic that groups can pose are:

1. Where did the mechanic learn about battery maintenance? On the job? In school? etc.
2. What qualifications for licenses does a person need to do this job?
3. What are safety precautions that this person takes?
4. Why did he or she choose this occupation?
5. What are the satisfactions the job provides and its disadvantages?

Students can obtain answers to their research questions in one of three ways:

1. Individually or in small groups students can visit local gas stations to interview mechanics.
2. A whole class can take a field trip to a gas station near the school.
3. Have a gas station mechanic come to the classroom to explain wet cell battery servicing and maintenance.

For either of these options, you or your students will need to contact a gas station mechanic willing and able to explain how a battery works to inform him or her of your interest, make sure he or she has a wet cell battery available for demonstration purposes if you or your students cannot provide one, and indicate you want him or her to respond to technical questions, demonstrate chemical processes with a battery, and respond to career-related questions.

During the demonstration by the mechanic, students can ask to see the following processes, and have them explained:

1. cleaning a battery
2. maintaining the electrolyte level
3. checking the battery charge
   - with a hydrometer
   - with a voltmeter
4. charging a battery with jumper cables

After the field trip, interviews, and/or guest lectures, follow-up discussion can be held on the scientific principles behind the operation and maintenance of a battery and also on what skills people need to be mechanics, what mechanics do, and what the satisfactions and frustrations are to being a mechanic.

Useful Prior and Subsequent Activities:

Offer to check the batteries of faculty members and/or student cars.

Resources:

Students and teachers can write to the following for further information:

Automotive Service Industry Association
230 North Michigan Avenue
Chicago, Illinois 60601

Comments From Teachers and Students After Using the Activity:

Section Five: OTHER SUBJECT AREAS

1. ACTIVITIES SUMMARY

This section of the manual contains two activities for art teachers, two for foreign language teachers, four on health education, and two related to physical education. Titles and capsule descriptions of each follow.

41.* **ART WORK:** Students analyze works of art in terms of the occupations these objects illustrate.

42. **THE ART OF TEACHING:** Students evaluate their potential for a professional or teaching career in art by interviewing artists.

43. **WORKING IN A FOREIGN LANGUAGE:** Students interview or write to multi-national companies and organizations to learn how foreign language skills are used by their employees.

44. **TRANSLATING THE PROBLEM:** Students simulate a series of encounters between foreign language speaking persons and social service agency employees.

45. **FIRST AID ON THE JOB:** Students visit industries and/or farms to research occupational injuries and first aid techniques used to treat them.

46. **NUTRITIOUS JOBS:** Students research through interviews different fields related to nutrition.

47. **GROOMING AND EXERCISING:** Students research physical fitness and grooming facilities by interviewing and observing staff at these establishments.

48. **HEALTH SUPPORTS:** Students explore medical support services in their community by interviewing appropriate professionals in the field.

49. **WORKING TO STAY IN SHAPE:** Students interview people whose careers are linked with physical education, discuss attitudes toward sports, and set up their own physical education program.

50. **SUPPORT FOR PHYSICAL FITNESS:** Students investigate careers related to the sports and recreation industries by interviewing employees in these industries.

*The activities in this section of the manual begin with number 41 because the numbering continues sequentially after the last activity (number 40) of the previous section on science activities.

2. INTRODUCTION

As a teacher of health education, art, foreign languages, or physical education, you should consider career education as an integral and appropriate component of your teaching which will **increase your students' ability and motivation to learn subject area content and skills.**

How will the integration of career education activities into your course help you achieve your subject area objectives? There are at least three answers to this question.

1. While engaging in the career education activities provided in this manual, your students will learn a great deal about the subject area **topics** that are related to the career or occupation they are studying. For example, if a student engages in volunteer work in a hospital or museum to learn what it is like to be a nurse or curator, the student is also going to learn a great deal about health or about art. Learning about careers in these fields automatically involves learning about social science issues and problems.

   In addition you can add a real-life or simulated learning component to your theoretical classroom teachings through the use of the activities provided here, because most of these activities involve students in actually **doing** things, from volunteer work to role plays to field trips. As such, these career education activities can help students comprehend better the theoretical aspects of art, foreign languages, health, or physical education by seeing or engaging in the practice of careers related to them. Theory and reality are combined for a strong total learning experience.

   In short, learning about careers in these fields automatically involves meaningful learning about health education, music, etc., **subject matter.**

2. Many of the **skills** in these course areas are developed or reinforced through the use of career education activities, including such skills as first aid (health education), performance (art), and pronunciation and fluency of verbal expression (foreign languages). For example, if your class interviews emergency ward staff in a hospital and then role plays the administration of first aid to a student accident "victim," the students will be developing skills in first aid.

3. By including career education activities in your courses, you will increase your students' **motivation** to study and learn about your subject area topics and develop related skills. By studying careers related to health and physical education, art, and foreign languages in exciting action-oriented ways, students will be stimulated to delve further into the field related to the occupations they are investigating. For example, health education students who study first aid by observing medical treatment and role playing emergency medical care will probably want to learn more about how the body fights illness and how injuries can be prevented. In this manner, career topics have the attractiveness of **"relevance"** for studying and learning subject area content matter and skills. Activities dealing with concrete, current occupations of personal concern to your students can add motivation to the disaffected, as well as involved student who wants to know what foreign languages, art, or health education has to do with the world of an adult. "Can studying menu planning get me a job?" is the unspoken query of many students today.

How can integration of career education with art, health education, physical education and foreign language study operate in practice? For an illustration of how you can integrate the activities into your existing lesson plans, examine one or more of the hypothetical Sample Week's Lesson Plans and accompanying explanation provided in the introductory material of each of the prior subject area sections.

OCCUPATIONAL FOCUS:

- Random Occupations

ART RELEVANCE

- Theme

Activity #41

Subject Area:
Art

ART WORK

Capsule Activity Description:

Students analyze works of art in terms of the occupations their subjects illustrate.

Teaching Prerequisites:

materials needed: art books
contacts with community: visit to museum (optional)
approximate preparation time: ¼ - 1 hour
approximate class time: ¼ - 4 classes

Art Objectives:

to learn to identify artists' themes and interpret techniques artists use to convey their "messages."

ACTIVITY

There are three parts to this activity, any one or two of which may be conducted independently of the other(s). In this activity students (1) look at art works in books, (2) visit a museum, and (3) develop their own art works. In each part of the activity, students

- identify occupations illustrated in the work of art;
- indicate how they can make this identification;
- discuss what persons engaged in those occupations do; and identify what skills people need in order to enter those careers.

One sequence for conducting the activity is to assign students as homework or during class to identify pictures, drawings, paintings, and sculptures which depict jobs; discuss these art works in the terms described above; take a field trip to a museum to identify additional art works which illustrate occu-

pations and discuss them later in class; and, finally, assign students to develop an art work of their own that illustrates one or more occupations. After developing their own art work, students present them to class and students attempt to identify the occupation(s) depicted while the artist comments on the accuracy of their interpretations.

Samples of appropriate art works commonly found in art books which illustrate occupations include:

Egyptian reliefs and sculptures of farmers, military professionals, etc.

Raphael:	**School of Athens**
Rembrandt:	**The Anatomy Lesson of D. Tulp** **Staalmeesters**
Daumier:	**The Sculptor's Studio** **The Painter** **The Print Collector** **In a Painter's Studio** **Lawyer and Client** **The Two Lawyers** **The House Painter** **The Butcher**
Van Gogh:	**The Postman** **Portrait of an Officer** **Sheep-Shearing**
Modigliani:	**The Notary of Nice**
Renoir:	**The Piano Lesson**
Degas:	Paintings and sculptures of ballet dancers
Picasso:	**The Three Musicians** **Three Dancers** **Painter and His Model** **At the Milliner's**

Soviet "socialist realism" paintings

Ford Madox Brown:	**Work**
Bellows, George:	**Men of the Docks** **The Dock Builders** **The Rope, or Builder of Ships** **Billy Sunday**
Benton, Thomas:	**The Miner** **Farm Girl** **The Cook**
Ingres:	**Monsieur Labrouste, Architect**
Vermeer:	**Musician** **The Music Lesson** **The Astronomer** **The Geographer**

To take one example, Picasso's "The Three Musicians," students can begin by identifying the possible occupations of the players – professional players, music teachers, or members of other occupations

who play as an avocation. The picture provides no further clues about their specific musical (or non-musical) occupation. Students next discuss how they were able to identify the possible careers of these players in terms of Picasso's technique of distortion and coloring and discuss what Picasso may be trying to "say" about the musicians through the use of these techniques. Then the class discusses what, in fact, professional players and music teachers do as part of their careers in addition to play – for example, professional musicians must practice, sometimes travel, record, audition, maintain their instruments, and usually teach. Finally, the class discusses what skills and personality characteristics are needed to become professional musicians or music teachers – for example, musical talent, dexterity (for piano and violin), a good ear, a sense of rhythm, patience, and perseverance.

In addition to allocating special class time to one or more of the three parts of this activity, the teacher can also informally discuss occupations illustrated in art books and students' own art works as they are studied or created – for example, when a student has completed an art work that illustrates a job, the teacher as part of his or her assessment of the work takes five or ten minutes to ask the student about the type of occupation shown, what techniques were used to present it, what people in that occupation do, and what skills and personality characteristics they need to enter it.

Useful Prior and Subsequent Activities:

Students select an occupation of their choice and write a brief paragraph identifying an artistic medium and, within that medium, describing an art work which could be used to illustrate that occupation.

- Students can discuss what occupations they think artists are likely to represent most often in their paintings, drawings, and sculptures and then compare their preconceptions with reality after examining several works of art.
- Students can interview members of occupations which they have identified in art works which they have themselves created.
- Students can interview members of the occupations they plan to depict in their own art work in order to identify aspects of their careers which can be represented in their artistic creations (e.g., calluses on the fingers of certain musicians).

Resources:

Art books which provide a number of reproductions of paintings, drawings, or sculptures.

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS

- Teacher
- Artist

ART RELEVANCE

- Composition

Activity #42

Subject Area:
Art

THE ART OF TEACHING

Capsule Activity Description:

Students evaluate their potential for a professional or teaching career in art by interviewing artists.

Teaching Prerequisites:

materials: none
contacts with community: interviews with professional artists
approximate preparation time: ¼ - 1 hour
approximate class time: ½ - 3 classes

Art-Music Objective:

to learn how to practice and maintain and/or expand painting, sculpture or drawing skills.

ACTIVITY

This activity is designed to assist art students to make career decisions and to learn additional ways to practice art forms. The activity centers around professionals who earn their living as creators and teachers.

The activity can appropriately be integrated into an art course whenever you decide to deal with the problems associated with the skill development and practice needed to develop artistic skills, since students will learn much from professionals and other teachers in the field about techniques for effectively practicing needed skills.

Since the best way to learn what it is like to be a professional artist or art teacher is to talk with artists in these fields, the exercise involves interviews with musicians and artists.

The activity can be implemented in several ways:

1. An entire class can participate as a class or in small groups.
2. Only those students who seem interested in potentially becoming professional artists can engage in the activity, as individuals or small groups.
3. The class can be divided into two groups: those interested in exploring a professional career as an artist and those more inclined toward a career in teaching.

Each student or group of students interviews two to five cooperative professionals. Artists who might be interested in being interviewed can be identified in a number of ways, including:

- Through professionals whom students already know, including their private art teachers;
- Through you;
- Through the local artists' union or professional society;
- Through the school of art at a local college or university.

Where access to such is limited, students can write letters to appropriate sources. See Resources Section at the end of the Activity.

Different small groups can be formed around sculpture, painting, drawing, and teaching.

After selecting people to interview each student or group of students develops questions or areas of interest to bring with them to the interveiw. Sample topics to ask about include:

- number of years as a professional
- percentage of income from creating
- source of remainder of income
- years of preparation before being able to support self, if ever, by the profession
- type of preparation required to become a professional
- discrimination encountered as a man or woman in the field in terms of hiring or being teased; if discrimination was encountered, how interviewee coped with it
- what motivated the interviewee to become a professional musician or artist
- how professionals develop new skills and maintain old ones
- practice habits – methods and amount of time devoted to practice
- amount of skill required to be a professional
- advantages and personal rewards from the career
- disadvantages or sacrifices required by the career
- recommendations to someone considering a career in the same profession

After gathering the experiences and suggestions from the professionals, students individually or in small groups organize the information using the following guidelines, which you can duplicate and hand out or place on the chalkboard:

Step 1: On a sheet of paper draw a line separating the page into two columns. Label one column, "Yes! I should." and the other "No! I should not." Under these headings list all the reasons for or against the career using reasons expressed by the professionals. Then add your own reasons.

Step 2: Look over this list and cross out those reasons that do not apply to you. Cross out those that balance out something in the other column. Looking over the edited list, write down the conclusion that you can draw from the facts about whether you might be interested in and fit for a career as a professional musician or artist.

Follow-up class discussion can be held on one or more of the following issues:

1. What practice techniques did the interviewees say they use that students should try out? (You may want to be careful not to intrude into the students' relationship with his or her art teacher and merely suggest students discuss with their private teachers those new ideas before trying them out.)
2. How much practice is needed to become a professional or teacher?
3. Is there discrimination in certain fine arts professions against men or women?
4. What motivated the interviewees to become professional artists?
5. What motivates members of the class? (You may need to exercise sensitivity with this question since some students may want to become professionals because of parental pressure or primarily to emulate a parent-artist or idolized artist. One way to respond to such motives is to encourage students to discuss them with each other and share experiences and different ways of responding to them.)

Useful Prior and Subsequent Activities:

- Students can discuss and compare in small groups or as a class how they practice and how much time they devote to practicing their art medium.
- Class can identify specific techniques for developing specific artistic skills – for example, perspective.
- Professionals, possibly from the local artists' association, can be invited to class to discuss students' or groups' conclusions about what careers in the fine arts entail.

Resources:

Students can write for further information to the following societies:

Artists Equity Association of New York
1780 Broadway
New York, New York 10019

Arts Equity Association
2813 Albemarle Street, N.W.
Washington, D.C. 20008

American Federation of Arts
41 East 65th Street
New York, New York 10021

American Association of Museums
2233 Wisconsin Avenue, N.W.
Washington, D.C. 20008

National Sculpture Society
250 East 51st Street
New York, New York 10022

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Business Executive or Employee
- Translator
- Tour Guide
- Government Foreign Service

FOREIGN LANGUAGE RELEVANCE:

- Writing
- Reading
- Conversation

Activity #43

Subject Area:

Foreign Languages

WORKING IN A FOREIGN LANGUAGE

Capsule Activity Description:

Students interview or write to multi-national companies and organizations to learn how foreign language skills are used by their employees.

Teaching Prerequisites:

materials needed: none
contacts with community: interview a worker who uses a foreign language as part of her/his job (optional)
approximate preparation time: 1 hour
approximate class time: 1 - 2 classes

Foreign Language Objective:

to motivate students by means of practical reasons to study foreign languages.

ACTIVITY

This activity helps students of foreign languages become aware of career opportunities in which their foreign language skills will be of assistance.

The group of students envisioned in this activity is the first level of foreign language study (although it can be adapted for use with more advanced students). This activity provides an opportunity to face the frequent problem of motivation, "Why should I study French (or Spanish or Italian)?" Since the first year of a language also includes many hours of memorization, the activity offers a useful change of pace. For more advanced students, all correspondence and interviews and reports can be written in the foreign language. The activity, while described as a small group exercise, can also be conducted as an individual student project.

Activity #43

Begin by preparing a list of career situations that use foreign language skills. This list could include travel agencies, airlines, social service agencies, multi-national companies, consulate offices, and other situations that you and your students can identify.

In addition to the State Department, people with language skills are hired for such agencies as the U.S. Information Agency and the Office of Economic Opportunity. Language skills often are needed for local government jobs in areas with large numbers of minority groups or immigrants; this includes bilingual teachers. Foreign languages are also used in the following fields: education, including research, administration and overseas schools; law, including legal aid and international law; library science, including archives and area studies specialists; media, including journalism, film companies and publishing; science, including research and matters of international cooperation; travel and tourism, including hotels and transportation.

Ideally, the activity should have person-to-person contact with people who use the language (and, for advanced students, in the foreign language). Whenever possible a local company or person should be consulted. If your school is in a community where personal contacts with people in these places are not available, you can easily adapt the activity so that all the work is done through the mails.

Once the list is developed, divide the class into small groups. Each group investigates a career situation or company. Each group arranges for an interview with an officer of the organization or company by contacting the personnel or public relations office. When personal contacts are not possible, students can write to the personnel or information officer of the organization. Students seek to learn:

- what the organization/company does;
- its use of foreign languages;
- a list of job titles that require knowledge of foreign languages; and
- a list of job titles in which knowledge of the foreign language would be helpful.

A report to the class follows the visit to the organization/company. For advanced classes, the report can be presented in the foreign language under study.

Interviewing someone doing the job can be an additional, optional activity. Each member of the group chooses one of the job titles and arranges for an interview. Arrangements can be made through the efforts of the first person contacted in the previous part of the activity, either "in person" or by mail. During the interview, the following topics should be the minimum covered:

- job title and job tasks performed
- salary range, hours, benefits
- educational or skill requirements of the job
- foreign language skills required
- ways in which the foreign language skills are used in the job
- amount of travel
- advantages of the job
- disadvantages of the job
- why the job was selected

A report of the interviews can be prepared and presented first to the group and then to the class.

A Career booklet "Foreign Language Careers" can also be another result of the activity. The student reports can be tathered together, possibly from different foreign language courses, and made available

to inform other students of career possibilities and to encourage other students to study foreign languages.

Useful Prior and Subsequent Activities:

- One of the persons interviewed can be asked to review the booklet and comment.
- A member of one of the organizations or agencies can be invited to the class to explain the career possibilities using the foreign language.

Resources:

Modern Language Association
62 Fifth Avenue
New York, New York 10011

Interpreting and Translating Services Office
United Nations
New York, New York 10017

Language Services Division
U.S. Department of State
Washington, D.C. 20520

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Translator

FOREIGN LANGUAGE RELEVANCE:

- Conversation

Activity #44

Subject Area:

Foreign Language

TRANSLATING THE PROBLEM

Capsule Activity Description:

Students simulate a series of encounters between foreign language speaking persons and social service agency employees.

Teaching Prerequisites:

materials needed: none
contacts with community: visit to social service agency (optional)
approximate preparation time: ½ - 1 hour
approximate class time: ½ - 3 classes

Foreign Language Objectives:

to practice and develop conversational speaking ability.

ACTIVITY

The purpose of this activity is to give students experience using the foreign language under study and to simulate the role of a translator.

The activity has two options, either of which can be conducted independently of the other. You can also use both parts. In the first part, students interview staff at one or more social service agencies that must deal on occasion or regularly with foreign speaking clients. (As a substitute for interviews, appropriate agency staff can be invited to talk to the class.) In the second part, students develop role profiles for foreign language speaking people and social service agency staff and then act out using the foreign language the problems described. Follow-up discussion is then held on both the accuracy of the grammar and pronunciation of the spoken parts and on the tasks and skills required by a professional translator.

Activity #44

You can integrate this activity into your regular foreign language lesson plans at almost any time, since you probably deal with conversational skills continuously. In addition, the activity would be appropriate after students have engaged in a lengthy translation assignment.

Although the description below treats the activity as a small group exercise, students can also conduct it as individual project assignments.

Option One – Interviews

Students break into small groups and are told to identify occasions when a translator's services might be needed, either in their own community or in a typical large city. You can provide assistance by mentioning the following situations which require translators:

- social worker interviewing welfare client;
- police questioning resident as a witness or accused of a crime;
- resident seeking help from police officer or fire fighter;
- hospital staff communicating with a patient, especially in the emergency ward;
- foreigners touring America, either as tourists, diplomats or businessmen or businesswomen;
- plaintiff, defendent, or witness in court;
- resident applying for a permit, license, or engaging in some related administrative contact with a government agency;
- unemployed person seeking a job in an employment office.

Each group, with your assistance, then arranges for a field trip to one or more of the following institutions where the use of translators is occasionally or regularly required:

- social work agency
- police station
- fire station
- hospital
- tourist agency
- embassy/consulate
- court
- government licensing and administrative agencies (e.g., passport/visa office; department of hunting and fishing; building code department)
- employment office or agency

Before visiting the site(s), the groups must determine in advance whether in fact these agencies do require the services of translators and whether they are interested in promoting student interviews. The groups can learn this information, with your assistance again, by telephoning the agency and/or visiting it to set up the field trip and identify the people to be interviewed (such as translators, agency supervisors, and foreign speaking clients).

Having made these arrangements, each group develops a brief interview guide listing the questions it wants to ask, such as:

1. How often are your translation services required?
2. How much knowledge of technical language (e.g., medical terms) must you know?

3. What motivated you to enter this field?
4. Are you a full-time translator or do you have other jobs?
5. What training did you need to enter the field?
6. What would happen in the situations in which you provide translations if you were not available?
7. How many foreign languages do you speak and which ones? How important is it that a translator be fluent in more than one foreign tongue?

After conducting the interviews the groups share their findings with the class and discuss and compare the answers to the above questions and others they posed.

Note: Instead of interviews, one or more of the individuals to be interviewed can be invited to class to describe the translator's role and to answer questions.

Option Two – Role Plays

The class in this option, which can also follow the interviews suggested above in Option One, conducts a series of role plays in which students take the parts of foreign language speaking persons, agency staff who must communicate with them, and translators. The role profiles for the exercise are developed by the students themselves, either individually or in small groups. A sample set of role profiles for one role play follows.

Role Profile A – Translator

You are a professional translator who works part-time for the local city hospital when they have patients either in the emergency ward or hospitalized. You translate to the doctors and nurses what foreign language patients want to communicate and, in turn, tell the patients the doctors' instructions and explanations. You have just been called into the emergency ward by a doctor who is examining a foreign language patient who is apparently having difficulty explaining to the doctor what is wrong with him or her. You walk over to the patient and say, in his or her language, "I am a translator and will tell the doctor for you what your problem is. What seems to be your illness?"

Role Profile B – Doctor

You are a doctor working in the emergency ward of a big city hospital. Once in a while patients come in who speak only a foreign language. When this happens, you call for the services of a translator who works in the hospital. You have just been trying to examine an emergency patient who doesn't speak English, so you have called for a translator. The translator has just walked in. You introduce him or her to the patient and wait to hear what the patient's problem is.

Role Profile C – Patient

You are a member of the city's medium size foreign language speaking community and speak almost no English. However, this evening you began to feel very sick so you went to the city hospital emergency room. You were seen by a doctor, but had trouble explaining to her what the problem is. You have a sharp pain in the lower right-hand side of your stomach and fee like throwing up. You think it might be because you had a very heavy dinner and simply ate too much, but you're not sure, even though you've had a similar problem in the past – overeating and getting a very bad stomach ache. But those earlier times you never felt like throwing up. This is what makes you think it's not just indigestion. A new person has just walked into the emergency room and is coming over to you and your doctor. You wonder who he or she is.

Activity #44

Using this model, the class develops several role play situations with accompanying role profiles. For advanced students, these role profiles can be written in the foreign language.

Different students volunteer or are assigned to enact the role plays. Observing students are assigned to make notes on errors of grammar and pronunciation the participants make.

You may need to exercise sensitivity and caution with some of the role plays. For example, students may feel uncomfortable playing the part of welfare workers or foreign speaking clients if these students have parents who are on welfare or if they themselves are minority, foreign language students. You can either avoid certain role play situations, such as the welfare-client one, or be very careful about whom you assign sensitive roles to. On the other hand, students can gain personal insight into some of their concerns if they are given the opportunity to role play people whom they, as foreign language students or as children of unemployed parents, must confront in their own lives.

After each role play, observing students evaluate the language skills displayed by the "translator" and "foreign language speaking person" and then discuss further one or more of the following issues:

1. What skills does a translator need to have to be effective?
2. What other translation tasks might a professional translator be called upon to perform?
   - translate books and articles for publishers
   - translate books and articles for scholars and government officials
   - act as a tour guide for foreign tourists or for American tourists traveling in foreign countries
   - act as translators for government officials when they visit foreign countries
3. What supplementary jobs can a translator take if he or she cannot support him/herself full time through translation work?

Useful Prior and Subsequent Activities:

- Foreign speaking person can talk to the class about problems he/she has encountered in communicating with English speaking people and on role of translator.
- Bi-lingual or native speaking social worker, police officer, poverty lawyer, embassy/consulate staff, etc. can be invited to class to evaluate one or more of the role plays.
- Students can write "Dear Abby" or similar letters requesting information to newspapers and government officials and agencies in the foreign language. Other students can play the role of newspaper editor or government official and answer the letters in the foreign language.

Resources: See Activity #43.

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Medical Paraprofessional
- Nurse
- Health Inspector
- Industrial Worker
- Farmer

HEALTH EDUCATION RELEVANCE:

- First Aid
- Accident Prevention
- Industrial Health Issues

Activity #45

Subject Area:
Health Education

FIRST AID ON THE JOB

Capsule Activity Description:

Students visit industries and/or farms to research occupational injuries and first aid techniques used to treat them.

Teaching Prerequisites:

materials needed: first aid supplies
contacts with community: visit to industrial plant(s) and/or farm(s); interviews with employees and safety officers
approximate preparation time: ½ - 1 hour
approximate class time: 2 - 4 classes

Health Education Objectives:

to learn and practice first aid techniques related to industrial and/or farming accidents; to be able to identify ways of preventing industrial and/or farming accidents.

ACTIVITY

The purpose of this activity is to integrate into the first aid unit of a health course a study of working conditions connected with occupational health and safety. The activity has two major parts: a field trip with interviews to one or more industrial plants and/or farms, and follow-up discussions and role-plays on the results. (If interviews are impractical, appropriate industry/farm representatives still can come to the school to talk with the classes.) The activity can be appropriately integrated into a health course whenever first aid or occupational health and safety are discussed. In addition, the activity could be used whenever a school staff member is injured on the job, since such a visible and near-by example of the problem of occupational health and safety and need for first aid will provide a good introduction and stimulus for the activity.

Activity #45

Part One – Field Work

How this part of the activity is organized depends on the local occupational situation. The number and variety of industrial and farming sites will influence which of the following options teachers and students will want to implement. Whatever option is chosen, however, the same objective is relevant for all of them: to gather a list of possible accidents that workers and/or farmers may have as part of their occupation and to identify how injured employees are treated and what measures are taken to prevent accidents on the job.

Option One: If there is a variety of industrial plants and/or farms in the local area, the class is divided into small groups of two to four students.* Each group investigates a different industrial or farm site. Where possible, different groups should select different types of industrial and farm sites to visit (e.g., large vs. small; automated vs. handicraft; union dominated vs. management controlled; public vs. private; accident prone vs. accident free). With the help of the teacher, each group contacts and identifies officials and employees at its site that it should interview. Groups then draw up a brief interview guide that contains questions on four related issues:

1. What accidents occur not infrequently on the job?
2. What first aid is provided when they occur?
3. What prevention efforts are mounted to avoid these accidents; and
4. What is the nature of the Safety Officer's job?

When each group visits its site, it can conduct the interviews as a group or split up to talk to different people. Students may find the latter solo approach less comfortable, but it enables them to talk to more people. While on site, students collect available company literature on health and safety issues.

Option Two: If there is only one industrial plant or farm that is convenient, students as a class visit that one site. For this option the class also develops an interview guide. Once at the site, the class splits up into small groups (designated before the field trip) and interviews different people simultaneously. Once again, students while on site collect relevant company literature.

Option Three: If a field trip is impossible, the class invites one or more individuals with knowledge of occupational safety to speak to the class and respond to questions about first aid and about the nature of their occupation. Before the speaker(s) arrive, the class develops a series of questions it wants answered around the four topics listed in Option One. Appropriate speakers include:

- Industry Safety Officer(s)
- Industry Medical Officer
- Industry Nurse
- Federal officials from the Occupational Safety and Health Administration (Department of Health, Education, and Welfare)
- Union officials
- Employees and/or farmers known to have been injured on the job
- Federal officials from the Department of Agriculture Regional or State Office
- Insurance company medical officer

Speakers are asked to bring relevant literature to the class when they come.

*Students can also engage in the activity as individual project assignments.

In making the arrangements for field trips or guest speakers, the teacher and/or students consult with the school guidance department to identify industries and/or farms which have been cooperative in the past on school activities and which are likely to be responsive to the need for student interviews.

Part Two – Follow-up Options

There are at least three follow-up activities the class can engage in after the field trip(s) or guest lectures.

Option One: For classes that engaged in options one or two, the samll groups can report their findings to the entire class and compare results and try to explain discrepancies. For example, did employees give a different version of the company's or farm's safety prevention measures than management did? If so, why and who is telling the truth? Did different industries or farms claim to use different first aid remedies for the same accident? If so, which remedy is best, or are both appropriate?

Option Two: General discussion, either in small groups or as a class, can be held on the four topics the interview guide treated, namely:

1. the nature and frequency of on-the-job accidents;
2. first aid measures taken when these accidents occur;
3. preventive steps taken to avoid accidents; and
4. the duties and training involved in being an industry or farm Safety Officer, medical officer, nurse, or health inspector.

If more than one industry or farm was visited or more than one guest speaker lectured, class can focus its discussion on discrepancies among industries, farms, or speakers in terms of the above four issues. If desired, additional steps can be taken to resolve such differences, such as writing to allegedly authoritative sources, like the government, for additional information. (See Resources section at end of activity for suggested sources.)

Option Three: Using the regular classroom resources in first aid, and perhaps with the technical assistance of the school nurse, students can prepare and simulate the proper first aid response to different accidents. Small groups of students, possibly with a team of two students each, can choose an accident and role play for the class, after practice by themselves, the first aid measures that should be employed. Examples of injuries or accidents that can be role played include:

- minor bleeding
- profuse bleeding
- heat prostration
- frostbite
- broken bones
- sprains
- pulled muscles
- spine injuries
- vomiting
- migraine
- pinched nerve
- limb crushed by a heavy object
- poisoning
- skin irritation

- foreign matter in the eye, nose or throat
- choking
- internal injuries

Another role play approach is for the teacher to assign role profiles to students who must then, without practice, act them out immediately. This approach is more realistic in terms of replicating the actual mental and physical quickness someone is likely to have to exhibit during an actual medical emergency. Sample role profiles for a first aid "dispenser" and the injured "employee" follow.

SAMPLE INJURED EMPLOYEE ROLE PROFILE

You work on a lathe in the Lumpy Lanolin Lubricating Company (known locally as "The Three L's"). You have just put a deep cut in your arm between the elbow and the shoulder. A co-worker has just rushed you to the first aid station where the first aid dispenser is looking anxiously at all the blood you're trailing into his/her office. You say to the first aid person, "Do something quick! I can't stop bleeding!"

SAMPLE CO-WORKER ROLE PROFILE

You work on a lathe in the Lumpy Lanolin Lubricating Company. The worker right next to you has just put a deep cut in his/her arm above the elbow. You rushed over and have just helped him/her into the first aid station where the first aid person is looking anxiously at the blood all over the floor. You haven't even noticed the blood all over you in your nervousness.

SAMPLE FIRST AID PERSON ROLE PROFILE

You are the first aid dispenser in the Lumpy Lanolin Lubricating Company. Many of the workers here use dangerous equipment, including high speed lathes. In fact, you have just looked up from reading the January issue of **Frostbite in the Factory** and there is a worker holding another worker who is bleeding terribly from his left arm above the elbow. What do you do?

Follow-up discussion after the role plays can center on what first aid techniques were used, whether they were appropriate and the best, and how the accident could be prevented or reduced in the future.

Useful Prior and Subsequent Activities:

- Class can study first aid techniques.
- Class can study the role of medical paraprofessional, nurse, health inspector, etc.
- The people interviewed and/or the guest speakers can be invited to class to evaluate the first aid role plays.
- Class can study occupational health (as opposed to emergency injury/accident) hazards, such as lung disease, cancer, deafness, and blindness.
- Class can study industrial pollution and its effects on the health of employees and the community in general.
- Students can research cases in which first aid is needed and analyze the biological principles used in first aid. (See activity #31.)

Resources:

Useful and free or inexpensive pamphlets and flyers can be obtained from the following sources:

ANA-NLA Committee on Nursing Careers
American Nurses' Association
10 Columbus Circle
New York, New York 10019

National Federation of Licensed Practical Nurses, Inc.
250 West 57th Street
New York, New York 10019

Assistant Administrator for Information
Health Services and Mental Health Administration
5600 Fishers Lane
Rockville, Maryland 20285

American Medical Association
535 North Dearborn Street
Chicago, Illinois 60610

American Red Cross
National Headquarters
Washington, D.C. 20006

U.S. Public Health Service
Office of Public Inquiries
Bethesda, Maryland 20034

Forest Service
U.S. Department of Agriculture
Washington, D.C. 20251

State and local health agencies
(consult phone book under state and/or city)

First Aid, The American Red Cross, Doubleday and Company, New York, 1973.

Eleven Blue Men, Berton Roueche, Berkeley, New York, 1953. Good case histories and first aid problems.

Local industries may have literature, as well as the national offices of major companies like Ford, General Motors, and U.S. Steel.

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Dietician
- Nutritionist
- Restaurant Manager

HEALTH EDUCATION RELEVANCE:

- Diet Design
- Nutrition

Activity #46

Subject Area:
Health

NUTRITIOUS JOBS

Capsule Activity Description:

Students research through interviews different fields related to nutrition.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with nutritionists and restauranteers
approximate teacher preparation time: ½ - 1 hour
approximate class time: 1 - 2 classes

Health Objectives:

to learn the nutritional value of different foods; to be able to plan a balanced menu; to learn how to cope with nutrition-related health problems.

ACTIVITY

In this activity, students research three different areas of nutrition and dieting:

1. The nutritional value of foods and beverages;
2. Meal and menu planning;
3. Nutrition-related health problems.

Begin by discussing what each of these areas of study constitutes. You can mention that:

The nutritional value of foods and beverages involves a study of the composition of food and drinks and what vitamins, minerals, calories, and poisonous substances they contain;

Menu and meal planning includes a study of what constitutes a balanced diet, how often people should eat, and what quantities and types of food people should eat; and

The nutrition-related health problems students can study include malnutrition, alcoholism, obesity, excessive thinness, and high blood pressure.

Ask students to identify which of these three areas of research interests them the most. Then break them into small groups based on their interests. Instruct each group to identify methods by which it can conduct its research. Examples of research methods follow.

1. Interview appropriate people about the career and health issues related to your research topic. Examples of people you can interview include:
   - school nutritionist
   - nutritional and agricultural experts in colleges and universities
   - farmers
   - food processers
   - dietitians in nursing homes, hospitals, schools
   - doctors and nurses
   - veterinarians
   - members of vegetarian societies
   - leaders of weight reducing groups.
2. Read relevant literature in the library or available from food companies. (Write to the latter requesting information about the nutritional value of the foods they sell.)
3. Visit the local government agency responsible for health and interview officials who are familiar with the nutritional aspects of health.
4. Read the labels on food products in supermarkets for listings of ingredients.
5. Write to local medical societies or to the American Medical Association requesting information on nutrition, dieting, alcoholism, obesity, malnutrition, and high blood pressure.

Before conducting any interviews or field trips, each group develops a list of questions it wants answered that relate to its particular research topic. Sample questions include:

1. How is the nutritional value of foods and beverages determined?
2. Why is sugar the major ingredient in so many foods, such as cereal?
3. Which foods have the most food value? Which beverages?
4. What do you enjoy about your job? Are there any noteworthy aspects of your work you do not like?
5. What skills are required in your job? How did you learn them?
6. Do food advertisers distort the nutritional content of their products? If so, why are they allowed to do so?
7. What is a balanced meal? a balanced diet?
8. What must one consider in planning a weekly menu?
9. What are the special nutritional needs of the sick, the elderly, growing children, babies, pregnant women? What foods best supply these needs? What foods and beverages should these people avoid?
10. How does alcoholism "cause" malnutrition?
11. What nutritional value is there in the foods prepared by the fast food industry?

12. Why do some people have such a difficult time reducing weight? What effects does excess weight have on the body? What are effective methods for reducing?

After conducting its research, each group prepares a report of its findings and delivers it to the class, responding to comments and questions from other students.

Useful Prior and Subsequent Activities:

- Students can plan their own menus, indicating the nutritional value in each item included.
- Students can examine a restaurant menu and identify the nutritional value of several of the offerings.
- Students can invite a nutritionist and professionals in related fields to class to discuss nutritional issues.

Resources:

Department of Agriculture
Food and Nutrition Service
500 12th Street, S.W.
Washington, D.C. 20024

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Beautician
- Health Facility Operator/Employees
- Health Consultant
- Physical Education Director/Trainer

HEALTH EDUCATION RELEVANCE:

- Personal Grooming
- Skin Care
- Posture
- Exercise

Activity #47

Subject Area:
Health

GROOMING AND EXERCISING

Capsule Activity Description:

Students research physical fitness and grooming facilities by interviewing and observing staff at these establishments.

Teaching Prerequisites:

materials needed: students may be asked to bring in their own beauty products to class
contacts with community: interviewing health and beauty specialists
approximate teacher preparation time: ½ - 1 hour
approximate class time: 1 - 2 classes

Health Education Objectives:

to learn proper grooming habits and exercises for personal health.

ACTIVITY

This activity has three parts: students (1) tour beauty and physical fitness establishments and interview beauticians, trainers, and their clients; (2) discuss their observations and findings in terms of both their own personal grooming and exercise needs and the nature of the occupations related to providing customers with physical fitness and grooming services; and (3) plan their own grooming program and exercise schedule.

Begin the activity by asking students to identify which area they are most interested in researching: grooming and beauty care or physical fitness. Encourage, but do not require some boys to select the former and some girls to select the latter. Then break the class into several small groups based on their research interests with each group. If possible, include at least two members of each sex in each

group. Instruct the groups to devise their own research methods for studying personal grooming or physical fitness and careers related to both. Sample research methods you can suggest include:

- Interview practitioners in the field. Through your friends, parents, the school physical education department, and the Yellow Pages of the telephone book, identify several physical fitness or personal grooming and beauty establishments whose operations you can observe and whose staff you can interview;
- Interview clients of these establishments. You can do this either by requesting permission from the staff to talk with clients or by interviewing people at random who you know patronize beauty and physical fitness establishments. Parents, relatives, friends and teachers can help you to identify such people;
- Read literature which contains advertisements and articles about physical fitness and personal grooming, such as:
  - exercise and grooming manuals (e.g., **Canadian Air Force Exercise Book,** Eileen Ford's **Beauty Book**)
  - magazines (e.g., **Vogue, Seventeen, Glamour**);
- Observe and listen to advertisements on television, billboards, and radio;
- Interview people who do **not** patronize beauty or physical fitness establishments on what their grooming practices and physical fitness routines are.

Instruct the groups to develop a series of questions they want to ask the individuals they plan to interview. These questions can focus on (1) what constitutes useful grooming practices and physical fitness exercises, and on (2) what occupations are involved in providing these benefits to the public and what these occupations are like. Sample questions students can develop and ask people who are employed in these fields follow:

1. What are some common grooming habits (physical fitness practices) that are helpful? What are some that are not?
2. How do you determine what is "good" and "bad" grooming (exercise)? Is grooming (exercise and fitness) important at all? Why? Does it have any relationship to personal happiness, mental health, physical health, occupational success, social success, or sexual success? Do some people use certain grooming practices (keep physically fit) or approach grooming (fitness) compulsively in order to compensate for feelings of inadequacy? In order to deny that they are getting old?
3. Is there or should there be a difference in the way men and women groom themselves (keep fit)? Why?
4. What kinds of services do you provide?
5. Are your customers mostly men or women? What might account for any difference in the ratio? Are your clients mostly young? middle aged? elderly? attractive? homely? overweight? Do different types of customers act differently while you provide your services? Do you "handle" different types of customers differently?
6. What skills does your job require and where did you learn them? What attracted you to the job?
7. Does your job provide you with any special satisfactions or frustrations? For example, does it enable you to be creative or to socialize ("gossip") with interesting clients? Does it require you to tolerate self-centered, vain, or demanding personalities or work on Saturdays and evenings?

8. What are your own personal grooming habits? Do you practice any of them for "business" reasons?
9. Is there discrimination against men, women, or minorities in your field? For example, do people automatically assume that men or women in your position are homosexuals? Has pride in "black" being "beautiful" changed the nature of black people's grooming habits? Has the recent public attention focused on the medical value of physical fitness increased the number of women or elderly people who exercise? Have more men recently become interested in forms of grooming which they previously ignored, such as using make-up, hair dyes, hair pieces and cologne, and getting "razor" haircuts?
10. Why do so many people lack the self discipline to maintain consistent grooming habits or continue a physical fitness program? Are there any "tricks" people can use to make it easier to conscientiously maintain a grooming or exercise regimen?
11. What influence has advertising had in promoting the use of products for grooming and exercise? Have the results been beneficial, harmful, or some of both? Do advertisements play on the public's fear of illness, social ostracism, and lack of sexual appeal? If so, how?

Students can also develop questions to ask of people who patronize grooming and physical fitness establishments to learn what grooming and physical fitness practices they follow and why and to determine their opinions of the staff who provide the grooming and exercise services.

If interviews and observations are not feasible, students can invite one or more staff persons who work in appropriate establishments to class to explain their work and answer questions.

After conducting their tours, interviews, and observations, each group discusses the results of its research in terms of (1) what constitutes "good" personal grooming or a "good" physical fitness program and (2) what the jobs are like which are involved in providing these services to the public. Each group reports its conclusions to the class.

Finally, each individual student develops a personal grooming plan and physical fitness program for him or herself. Students can volunteer to describe their regimen to the class and explain why they feel it is a "good one" for them. A final discussion topic can be: Why do so many people who realize the importance of maintaining healthy grooming and exercise habits fail to initiate or maintain them, and what methods or "tricks" can individuals use to encourage themselves to conscientiously pursue them?

Useful Prior and Subsequent Activities:

- Students can develop their own after-school "establishment" for providing grooming or exercise tips, or beautification and grooming services, to other students.
- Students can implement the grooming and exercise regimens they developed as part of the activity and report to the class the results in terms of physical changes (e.g., weight loss, less fatigue, softer skin) and mental changes (e.g., increased self-confidence, more aggressiveness).

Resources:

Film: "Cosmetologists," Hairdressers and Cosmetologists Association, 175 Fifth Avenue, New York, New York 10010

Activity #47

For additional information, students can write to:

President's Council on Physical Fitness and Sports
400 Sixth Street, S.W.
Washington, D.C. 20024

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Nurse's aide
- Medical Paraprofessional
- Pharmacist
- Laboratory Technician
- Dietitian

HEALTH EDUCATION RELEVANCE:

- Health Care Delivery
- Accident Prevention
- First Aid
- Hygiene

Activity #48

Subject Area:
Health Education

HEALTH SUPPORTS

Capsule Activity Description:

Students explore medical support services in their community by interviewing appropriate professionals in the field.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with medical support personnel at one or more health care facilities
approximate preparation time: ½ - 1 hour
approximate class time: 2 - 3 classes

Health Education Objectives:

to learn about accident prevention, first aid, and hygiene; to understand that the quality of personal medical and health care depends not only on the quality of doctors and nurses but also on the quality of the health care support staff; to learn how to use the health care delivery system to improve or maintain one's personal health.

ACTIVITY

The purpose of this activity is to explore the health care delivery system and the people who support the system in careers that are not directly medical. The activity involves students in interviewing appropriate employees of health care facilities and engaging in follow-up discussions of what they learned. (If interviews are not feasible, the employees can be invited to talk to the class.)

You can integrate this activity into your health education lesson plans at several appropriate points. Most basically, you can implement the activity whenever you treat first aid, accident prevention or hygiene, since students are going to learn these areas merely by interviewing health care support staff about the tasks these professionals engage in as part of their regular occupation. You can also use the activity, clearly, when you discuss health care support staff – who they are and what they do. Finally, the activity can be introduced very productively when students are studying the practical issue

of how to get the best possible health care, since students often fail to realize that getting high quality care depends not only on good nurses and doctors but also on good nurse's aides, laboratory technicians, and other individuals whose work at first blush may not seem to affect the quality of health care. By making students aware of this issue, you can go on to discuss how students can attempt to ensure that they receive quality care from these auxiliary health care personnel.

Although the activity can be conducted as an individual project, the option described below is for small groups.

Divide the class into small groups of students. Each group is responsible for interviewing the health care support staff at one local health care facility. Possible facilities and relevant support staff are listed below:

- hospitals: nurse's aide; laboratory technician; dietitian; pharmacist; paraprofessional
- clinics: same occupations
- pharmacies: pharmacists
- nursing homes: nurse's aide; dietitian; paraprofessional
- mental hospitals: nurse's aide; pharmacist
- dental offices: dental technician or assistant
- ambulance companies: ambulance driver

Once each group has selected a facility to visit, it develops a list of questions it would like answered. A sample interview guide follows.

SAMPLE INTERVIEW GUIDE

Name _____

Title or Position _____

---

1. What exactly do you do in your job?
2. What motivated you to enter the job?
3. What training did you need to enter it?
4. How much knowledge of medicine or health care is necessary to perform your job well?
5. What is the relationship between what you do in your job and the rest of the facility in which you work?
6. What do you like about your job?
7. What don't you like about it?
8. Did you encounter any discrimination as a man or woman entering the job or working in it? If so, how have you responded to that discrimination?
9. Is there anything you would like to add about your job that might be useful to us?

After developing the interview guide each group, with your assistance, contacts a facility and individuals within it who are interested in being interviewed. Students can make such contacts by:

- working through someone in the class or school, one of whose parents or relatives works in a health care facility;

- using the school guidance department or school nurse, doctor, or physical therapist to identify possible facilities and people;
- contacting in larger medical facilities the Information Officer, Public Relations or Personnel Office for permission to conduct interviews and names of staff to talk with; and
- contacting in small facilities the director or owner.

Each group then divides up the interviews among the members or conducts them as a group.

After conducting the interviews each group meets again briefly to compare notes (particularly if different members of a group interview different people) and decide who will report their results to the class. After each group has presented its findings to the class, the following discussions can be held:

1. What specifically was learned about:
   - accident prevention?
   - first aid?
   - hygiene?
2. In each of the facilities visited, who besides the doctors and nurses had an effect on the quality of the health care clients receive?
3. What are some of the ways in which health care support staff can effect the quality of the health care clients receive? For example:
   - the accuracy with which pharmacists fill prescriptions;
   - the accuracy and speed with which laboratory technicians perform lab tests;
   - the sensitivity with which nurse's aides care for mental patients;
   - the appropriateness of special types of patients' menus dietitians develop (e.g., for those patients on a salt-free diet).
4. What can the clients do to obtain the best possible health care from these support personnel?
5. What career advantages and disadvantages are there in being a health care facility dietitian, paraprofessional, pharmacist, lab technician, or nurse's aide?
6. Do some people want to become health care professionals because the jobs satisfy certain needs – like wanting to care for people, wanting the excitement of facing "life-or-death" situations, or wanting to learn about medicine in order to be able to keep oneself from getting sick? You will want to be tactful in this discussion in order not to offend students whose parents work in the health care field.

One of the individuals interviewed can be invited to class to critique the students' conclusions.

Students can volunteer to work in a health care facility and report to the class on the accuracy of its conclusions.

Useful Prior and Subsequent Activities:

- Students can engage in Activity #45 on occupational accidents.
- Students can engage in volunteer work at one or more of the facilities studied.
- Students can talk with their family physician on the phone, or the next time they visit him or her and ask how the doctor utilizes and is dependent on the services of health care support staff (e.g., for lab tests and lab reports).

Activity #48

Resources:

Students can read one or more of the following books which discuss the functions of nurse's aides, paraprofessionals, and laboratory technicians:

I Never Promised You a Rose Garden, Hannah Green, Signet Books (New York: 1964). Paperback. Useful on nurse's aides in a mental hospital.

The Snake Pit, Mary Jane Ward, Signet Books (New York: 1946). Paperback. Again, useful on nurse's aides in a mental hospital.

The Mental Hospital, Alfred Stanton and Morris Schwartz, Basic Books (New York: 1954). Hardbound. Contains chapter on "Roles of Doctor, Nurse, and Aide."

The following three books contain intermittent but relevant sections on laboratory technicians and nurse's aides:

The Making of a Surgeon, William A. Nolen, Pocket Books (New York: 1970). Paperback.

A Surgeon's World, William A. Nolen, Fawcett Books (New York: 1972). Paperback.

Five Patients, Michael Crichton, Bantam Books (New York: 1970). Paperback.

Students and teachers can also write for further information to:

The American Medical Association
535 North Dearborn Street
Chicago, Illinois 60610

Assistant Administrator for Information
Health Services and Mental Health Administration
5600 Fishers Lane
Rockville, Maryland 20285

American Nursing Home Association
1200 15th Street, N.W.
Washington, D.C. 20025

American Hospital Association
840 North Lake Shore Drive
Chicago, Illinois 60611

American Dental Association
211 East Chicago Avenue
Chicago, Illinois 60611

American Dietetic Association
620 North Michigan Avenue
Chicago, Illinois 60611

American Society of Medical Technologists
Suite 1600, Herman Professional Building
Houston, Texas 77025

State departments of health

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Athlete
- Physical Education Trainer
- Trainer
- Coach
- Physical Therapist

PHYSICAL EDUCATION RELEVANCE:

- Physical health
- Athletic skills

Activity #49

Subject Area:
Physical Education

WORKING TO STAY IN SHAPE

Capsule Activity Description:

Students interview people whose careers are linked with physical education, discuss attitudes toward sports, and set up their own physical education program.

Teaching Prerequisites:

materials needed: none
contacts with community: interviews with athletes and coaches and people involved in physical education or physical therapy
approximate preparation time: ½ - 1 hour
approximate class time: 1 - 2 classes

Physical Education Objectives:

to identify ways to become and remain physically fit; to identify attitudes conducive to developing and keeping up a personally satisfying physical fitness program.

ACTIVITY

This activity has two parts which look at physical education from the affective and the psycho-motor aspects. Either option separately or both options can be used.

Since both attitudes and physical development are basic goals of any athletic or physical education program the activity can be integrated into a physical education course during those occasions when the physical education facilities are not available for your normal use. With some advance planning, the discussion activities can be completed during one class period.

This activity centers around interviewing a professional working with physical development. Guest speakers can substitute for interviews, however, if the latter are not practicable. The exact person students interview (or invite to class) will be determined by the option they choose. The activity can

be done in small groups or by individual students. Either option can be implemented or half the class can engage in one option and the other half of the class pursue the second option. You or your students can identify people to interview by contacting local sporting and health clubs and organizations, the town, city, or county recreation department, or school coaches and varsity athletes.

Option I – Affective: Values and Sports

For this option, students interview one or more professional athletes from any sport, coaches, trainers, or anyone else professionally involved with the competitive aspect of sports. Each group member interviews one person. The group can be divided by either sport or occupation.

Each group compiles the results and develops a consensus that expresses the opinion of those interviewed.

Each student will then write a paragraph either agreeing or disagreeing with the results of the survey. The paragraphs are then read and discussed in the small groups. A summary of the discussion is then shared with the whole class.

Each group develops its own interview guide along the lines of the following sample guide.

Sport concerned: _____

Job title: _____

Job tasks: _____

Education and/or training: _____

What are your ideas on:

- Competitive Spirit: _____
- Team Work: _____
- Fairness: _____

How do attitudes affect physical fitness, athletic ability, and athletic performance? _____

_____

How do you explain what a good mental attitude is?

_____

How do you get (or get your players) "psyched up" to perform well?

_____

Is there discrimination against or in favor of minority groups in your sport? Are the equivalent women's sports funded at the same level and given the same benefits?

_____

How do you cope with frustrations? _____

_____

How do you cope with losing? _____

_____

Option II – Psycho-motor: Exercise Program

For this option, students interview trainers, coaches, physical education teachers, physical therapists and professional athletes. Each group member interviews one person. The groups are formed around different occupations, so that all the members of a particular group will interview members of the same occupation.

Each group develops its own interview guide along the lines of the following sample guide.

Job title: _____

Job tasks: _____

Education and/or training: _____

Particular sport, if any: _____

What is the most important aspect of being in "good condition"? _____

In your job or sport, what are the special physical requirements? _____

What are the best ways to keep "in shape"? _____

What are the three most important exercises? _____

1. _____

2. _____

3. _____

What is the program of exercise that you would suggest for an adolescent? _____

Should there be different physical exercise programs and exercises for boys and girls? _____

_____

Each group compares their interview results and summarizes them. Each group then develops exercise programs that can be used by the average adolescent to get into and to stay "in shape." The groups then compare their exercise programs with each other.

Follow-up class or small group discussion can be held on one or more of the following issues:

- Everyone knows that emotional state can have an enormous influence on athletic performance. What ways are there for a person to "psych" himself or herself up so that he or she performs at peak ability? How can one develop an attitude that is conducive to keeping up with a regular exercise schedule to maintain good physical health?
- Does exercise have an effect on emotional health? on one's personality? Do athletics "build character" or develop "win at all costs" attitudes?
- Should there by any discrimination between men and women, or boys and girls, in terms of what athletic programs are available, how much the school spends on them, what the purses are in professional athletic competition, or what exercises people should engage in for good physical health?
- What are some of the emotional satisfactions of being a coach, trainer, physical education teacher, or professional athlete? Do some people choose these careers because the jobs satisfy some personal needs for them, such as a desire for fame or power?

Activity #49

Useful Prior and Subsequent Activities:

- Career booklets can be made up on all the careers investigated and made available to other students.
- (Option II) A series of conditioning exercises can be developed for younger or older students or for adults.
- (Option II) Group members can implement the "exercise" portion of the physical education class.

Resources:

There are numerous paperback books that describe the lives of athletes and coaches. Some of the better are:

Go Up for Glory, Bill Russell (Berkeley Medallion)

Paper Lion, George Plimpton (Pocket Books)

Out of Their League, Dave Meggyesy (Paperback Library)

Instant Replay, Jerry Kramer (Signet)

Ball Four, Jim Bouton (Dell)

Students can also write for information to:

President's Council on Physical Fitness and Sports
400 Sixth Street, S.W.
Washington, D.C. 20024

Comments From Teachers and Students After Using the Activity:

OCCUPATIONAL FOCUS:

- Sport Store Salesperson
- Manager of Sports/Recreation Facility
- Writer
- Ticket Seller, Usher, Concessionaire
- Recreation Supervisor

PHYSICAL EDUCATION RELEVANCE

- Physical Fitness
- Athletic Skills

Activity #50

Subject Area:

Physical Education

SUPPORT FOR PHYSICAL FITNESS

Capsule Activity Description:

Students investigate careers related to the sports and recreation industries by interviewing employees in these industries.

Teaching Prerequisites:

materials: none
contacts with community: interview at sport or recreation facility
approximate preparation time: ½ - 1 hour
approximate class time: 1 - 2 classes

Physical Education Objectives:

to identify the relationship between athletic equipment and athletic skills; to analyze the relationship between general physical fitness and athletic skills.

ACTIVITY

The purpose of this activity is to have Physical Education students become aware of the career opportunities related to the sports and recreation industries.

The activity does not easily integrate directly into the normal physical education program as held in most schools. However, in most physical education programs there are days when a non-athletic activity is needed; for example when the usual facilities are unavailable due to repairs and maintenance or because the facility is "set up" for a special event. The beginning or end of the school year are other possible times you can use the activity, or simply when a change of pace is needed.

Students divide into small groups according to favorite sports or recreations. Each small group "brainstorms" jobs related to the sport under discussion. For example, a group on skiing might list:

professional ski racer, mountain resort manager, ski instructor, ticket seller, ski shop salesperson, sports writer, accountant at a resort or local restaurant, and surgeon.

Each student chooses a job from the list for further investigation. Interviewing is the best way to investigate the job, but if a personal interview is not possible, a written or telephone interview can be arranged or guest speakers invited to class. Students may already know people who will be willing to discuss their job, or their parents may be able to help out. The local telephone book can be used to identify companies whose personnel or information officer can be contacted for the names of people to interview. Finally, you or other physical education teachers, the school athletic coaches, and students or varsity teams can be contacted for the names of appropriate people to interview.

Each group or student develops an interview guide along the lines of the one presented below.

Job title: _____

Job tasks: _____

How does this job related ot the enjoyment of the sport or recreation? _____

How does this job affect the physical fitness or skills of athletes and recreational sports people? _____

Why was this job first chosen? _____

What are the advantages of this job? _____

What are the disadvantages of this job? _____

Special education and/or skill requirements for this job? _____

_____

Other related jobs:

Within the sport or recreation area: _____

Outside the sport or recreation area: _____

Other interesting information: _____

_____

The members of the group compile the job information into a booklet describing the job opportunities in the sport or recreational activity. All information gathered is shared, time permitting, with the whole class. The booklets can be made available to all the students in the class and in the school through the guidance office or the library.

Useful Prior and Subsequent Activities:

- A manager of a sports facility can be invited to the class to discuss job opportunities in her/his facility.
- A staff member of the local Employment Security Office or an employment counsellor can be invited to react to the booklets and discuss the job market.

Comments From Teachers and Students After Using the Activity:

RESOURCES

RESOURCES:

This Resources chapter discusses three aspects of career education which must be considered in order to implement the activities most productively. The first resource, Teacher Objectivity in Career Education, suggests how to avoid sex, ethnic, class, political, and religious stereotyping of careers and jobs. The second resource, Liaison with the Community, discusses some effective methods for identifying appropriate people, businesses, and groups in your community whom your students may want to interview or observe, and suggests ways of contacting these resources. The third resource, Effective Teaching Methods for Career Education, offers ideas on how to implement easily and effectively those instructional strategies, such as role plays, interviews, and volunteer work, which are highly effective for teaching career education.

TEACHER OBJECTIVITY IN CAREER EDUCATION

This resource is designed to help you to avoid sex, ethnic, and class biases when you implement the activities. Such biases can occur in career education because the topics and feelings discussed are often very personal. However, you will not only want to prevent **your** personal feelings about particular careers and individual students from intruding into the classroom, you will also need to help your students become aware of and explore **their** biases and stereotyped thinking.

Support, Not Direction

Your role in career education is to supply opportunities for students to gain information about careers, to investigate interesting careers, and to evaluate themselves in relationship to the specific careers under study. You should help students to find out the range of opportunities available and help them to discover for themselves their own interests and abilities.

How can you avoid getting drawn into a directive role? What can you do if a student asks you, "Do you think I'd make a good electrician?" or "I've been accepted at MIT and also at Louisiana State University. Should I go to MIT and become an engineer or go to LSU and major in history?"

Some useful ways of responding to requests for advice and yet maintain your objectivity are to:

- Be completely honest. Students can detect insincerity and hypocrisy very quickly. This does not mean telling them everything you feel or believe about a job or answering all questions about your own occupation and background. It does mean telling students you don't want to express your opinion on an issue, if you don't, and saying you won't answer some or all questions about your personal job experience, if you don't want to.
- Avoid giving advice about what jobs students should prepare for or select. This may be hard to do since it is what students often seem to want most. Unfortunately, giving advice about career preparation and selection rarely helps students because:
  - it excuses the student from responsibility for his or her decision if he or she does take your advice;
  - it discourages students from solving their own career problems and asking the **right** kinds of questions from adults.
- Offer information, clarify ideas, suggest methods for finding more answers (research, sources of help), and ask students leading questions ("Why are you afraid of becoming an electrician? Do you think you could develop these skills? Do you have this kind of personality?").

Neutrality, Not Moralizing

Students and adults have stereotypes about certain occupations, some of which, like garbage collection and psychiatry, are the butt of many a joke and snide comment. You can avoid denigrating these occupations – and avoid moralizing favorably about careers traditionally viewed as prestigious – in the following ways:

- Avoid making judgments about careers and jobs, such as, "It's terrible to be an obstetrician – you can get called out of bed at any hour." Instead, note that "Obstetricians sometimes have to be called out of bed at all hours of the night."
- Tell students who ask, "Do you think it's bad to be a garbage collector?" that they must form their own conclusions. You might begin the asking them what they mean by "bad" or "good" and whether they think the salary and hours would be sufficient compensation for the job.

- Whenever occupations or careers are discussed that society makes fun of or degrades, such as garbage collection and ballet dancing, raise for discussion some of the advantages and satisfactions of such occupations as well as the disadvantages and dissatisfactions, and how the people who hold such jobs cope with society's negative attitudes.
- Don't **glorify** careers in medicine, law, engineering, education, and so one, which are generally viewed as lucrative, prestigious, and enjoyable. Let students, on the basis of facts provided in the activities (and from you), come to their own conclusions about these high prestige occupations. In short, present facts ("Being a lawyer can be boring at times"), not judgments ("You won't like being a lawyer, because it often involves boring work.")

Provocation, Not Restriction

While you want to be careful not to let your biases about careers intrude into your teaching, you do want to encourage – even provoke – your students to express their stereotypes and prejudices. Students need to express their biased opinions and strong feelings about jobs because only by verbalizing and discussing their attitudes will students be able to correct their misconceptions and make career decisions rationally. In order to create an open class atmosphere where students feel free to express honestly their personal feelings and opinions about jobs you will want to:

- Welcome all student opinions non-judgmentally. This does not mean simply tolerating divergent views; it means actively soliciting them by:
  - indicating that in selecting which career to explore or pursue there are not "right" or "wrong" answers;
  - explicitly asking students to express their opinions and feelings and indicating that while you, of course, have opinions and feelings of your own, you will not express any judgments of what the students say, nor are you interested in judging what they say;
  - asking open-ended questions, such as, "Is it all right to switch careers after age 50?" rather than, "Why is it often difficult to switch careers after age 30?"
  - including in quizzes and tests preference questions that are not graded on the basis of what preferences students express but are either ungraded or graded on the basis of how thoroughly the preferences were explored.
- Repeatedly encourage students to address their opinions to each other and to respond to each other's comments rather than always directing their statements to you.
- Have students discuss issue-oriented questions in small groups and instruct pupils to concentrate on the expression and substantiation of opinions.
- Take advantage of occasions when students seem to "get off the track" in a discussion and talk about feelings that may seen unrelated to the career education issue at hand. Often these so-called "irrelevant" opinions and feelings are the basis for students' (and adults') underlying feelings about occupations.
- Encourage and assign students to read fictional and autobiographical literature about careers where the emphasis is on expression of feelings.

Objectivity, Not Bias

Since biases and stereotyping are natural human responses to living in any society, you will want to make a special effort when you teach career education to be aware of and to compensate for class, sex, ethnic, and political biases toward occupations that either you or your students may have and express. In general, adopt a dual posture when it comes to sex, race and other biases in career education. On the one hand, try to be as **tight-lipped** as possible **about your own biases**, preventing them

from intruding into the classroom. On the other hand, be as **active** as possible in promoting full exploration of all biases expressed and felt **by your students.** Seize every opportunity to promote discussion about **their** attitudes and stereotypes about who should consider what kinds of jobs and careers.

There are four areas of bias you will want to be careful to avoid in your own approach to teaching career education.

- **Class Bias:** Try to devote "equal time" to talking about and implementing activities on doctors, lawyers, and engineers vs. truck drivers, typists, and construction workers. In addition, don't express the opinion (if you hold it) that lower class or poor students should not consider entering white collar professions or that middle-class students shouldn't contemplate taking blue-collar jobs. Instead, probe the reasons students give for their job preferences and discuss with them the advantages and disadvantages of the jobs or careers being studied.
- **Sex Bias:** Avoid the use of sex-biased occupational terms. Refer to "fire fighters," not firemen, "chairperson," not chairman, and so on. The use of sex-free terms will sound unfamiliar to most students and may therefore prompt questions about them and a lively discussion. Also avoid using the pronoun "he" when referring to people in general, and instead say "he or she." More importantly don't use the pronoun "she" when referring to people in occupations traditionally held by women (nursing, elementary school teaching, clerical, etc.) or "he" when referring to occupations traditionally held by men (law enforcement, engineering, etc.). Finally, don't express opinions you may have about why women should not become baseball umpires, taxi drivers, or surgeons or why men should not become nurses, ballet dancers, or telephone operators.
- **Ethnic Bias:** As with sex or class bias, try to ignore any feelings you may have about students from particular ethnic backgrounds who may be considering occupations which much of society regards as "inappropriate" for blacks, whites, Mexican-Americans, Native Americans, or any other ethnic group. Remain neutral not only about minority group students who express interest in entering traditionally majority dominated professions, but also toward white students who are considering taking jobs traditionally held by minority groups.
- **Political Bias:** Finally, be aware of your feelings about such jobs as careers in the military, working for the United Nations, writing for the **Daily Worker** or the **Minuteman,** and other politically sensitive occupations. Try not to let your political opinions intrude into your discussions of these careers.

When your **students** express biased or stereotypic sentiments, accept their feelings and opinions as honest reactions of human beings and treat them calmly and honestly. In many cases the reaction of other students will balance the biased statements. Values are learned slowly and changed slowly, so a one-shot overreaction on your part will have little or no effect on the students except to quiet them in future discussions and possibly entrench the bias.

Many students are not aware of their own biases or of the biases in the world of work. Career education should seek to make **all** students aware of **all** possibilities for careers by bringing about such awareness.

Another aspect of bias in career education you can discuss with students is awareness of social prejudice and stereotyping which people can expect to face in selecting certain occupations, whether such biases should influence their choice of a career, and how, having selected a career which may provoke prejudice, to cope with that prejudice.

For example, you might discuss some of the problems women face who try to become or already have become doctors, politicians, and baseball umpires or problems minority persons face who are seeking to become or who have already become bankers, skilled craftspersons, and police officers. Discriminatory behavior you can discuss includes less preferred job benefits, and slower or non-existent promotion opportunities. You can also discuss and **role play** ways women and minorities can try to cope with the discrimination they may experience in these occupations. Students can discuss and role play such options as firmly but not defensively resisting all or crucial instances of discrimination; seeking internal (through the company or agency) or external (through the courts) redress of grievances; and retaliating more forcefully against the persons responsible for the discrimination in ways that can terminate the discrimination even if these methods won't change anybody's prejudiced attitudes.

Student awareness of biases in others and of their own prejudices can be approached in many ways. The main requirement is that you be alert to opportunities to **bring up the issue** indirectly and naturally. Ways in which to address the issue of bias and stereotyping include the following:

- Assign students to nontypical roles such as the male nurse, the female carpenter, and the black employer or supervisor confronting the white employee. This type of indirect approach can help students learn to cope with discrimination and bias and also present an opportunity for students to react to the issue of discrimination in a realistic context.
- Whenever a student makes a sex- or class-biased comment, raise the issue for discussion – for example, if a student laughs at the idea of a female astronaut, ask the class to discuss what is "wrong" with a woman becoming an astronaut and what they find "funny" about the idea.
- When a student refers to a "fireman" or "repairman," point out the masculine bias in these terms and ask what significance there may be to the use of such words in terms of sex bias.
- When students develop polls or interview instruments, review them for sex and class biases and stereotyping and point out any such prejudices.
- Conduct one or more of the activities which specifically involve consideration of sex or class bias, such as Activities 3, 8, 12, 20, 26, 32, and 47.

In conclusion, your major concern should be to listen to yourself speak (and think) so you can avoid expressing biased (or any) opinions about students or occupations and, conversely, to listen carefully to what your students say so you can point out to them what may be biased thinking on their part and raise for discussion specific instances of class, sex, ethnic, and political bias as they relate to careers and jobs.

LIAISON WITH THE COMMUNITY

Since many of the activities in this manual involve field trips and interviews with members of the community, this resource is designed to help you identify and enlist support from appropriate individuals, groups, businesses, and agencies in your local community. For information on how to plan such activities as field trips and interviews, consult the last resource section, Effective Teaching Methods for Career Education.

Identifying Places and People to Contact

When arranging a field trip or interview, you and your students will need to: (1) identify appropriate **places** – businesses, agencies, etc. – to visit; (2) identify the **person** within the site you have selected who can arrange for the trip; and (3) identify appropriate **tour guides or interviewees** at the site.

When selecting sites to visit, you of course want to choose those which are relevant to the activity you are implementing. You should also pick ones which are likely to be interested in providing a tour or interviews so that you do not waste your time contacting businesses or agencies who keep rejecting you. Therefore, your first step should be to learn whether your town, city, or school district is one of the many which provide a list of companies and agencies that encourage field trips. You can obtain this information from your State Department of Education, local superintendent of schools, or state or school audio-visual department. Some localities that do provide such lists are:

Los Angeles City Schools
Baltimore City Public Schools
Cuyahoga County Schools (Ohio)
Antioch Unified School District (California)
Marin County Schools (San Rafael, California)
Washington, D.C. Public Schools
Milwaukee Public Schools
New York City Public Schools
Schenectady City School Districts (New York)

There are several other resources you can contact for help in identifying companies and agencies which encourage field trips. The best persons to help you make contacts are:

1. School administrators who have contacts in the community;
2. The school guidance department;
3. Students who hold part-time jobs or have older brothers and sisters who hold part-time jobs in companies and agencies;
4. Students' parents who work.

You can also thumb through the advertisements in last year's school yearbook for companies which, having already made contact with the school, may be receptive to your requests. Failing all else, you can seek information on sites to visit in the public library, in the Yellow Pages of the telephone book, from local labor unions, and from business associations and fraternal clubs, such as the Rotary Club, Lions, Masons, Elks, Moose, Chamber of Commerce, and Better Business Bureau.

Having identified the place you want to visit, your next task is to decide whom to telephone or visit at the site to arrange for the field trip. What you want to do is to make as few phone calls or visits as possible before contacting the person in the company or agency who has the **responsibility for**

authorizing a field trip. When possible, utilize the same contacts listed above to learn whom you should call or visit. If you must, take "pot luck" by asking the company switchboard for one of three departments:

- Personnel Office;
- Information Office;
- Public Relations Department.

It may take you a few calls to reach the person you want but by starting with these three offices, you will have already cut through considerable "red tape."

Enlisting the Interest of Target Businesses and Agencies

Once you or your students have identified people and places to visit, there are several ways to go about contacting them and stimulating their interest in your project. The best approach, where time permits, is to (1) send a letter indicating you plan to call for an appointment and explaining why you want to meet, (2) telephone two or three days later to set up a time for an appointment, and (3) visit the responsible official.

In all your communications – in your letter, your telephone conversation, and during your visit – you may need to combine tact with persistence to enlist the individual's support. On the other hand, many people and places will welcome a visit from your students. If you are expecting objections or have never arranged for a field trip before, there are several ways in which you can prepare yourself for the telephone call and visit.

1. Try to find out whether other teachers in your school have had any contacts with the agency or business in question and can give you advice on how best to approach it.
2. Try to get the name of at least one person who works for the business or agency so that you can use that person's name as a reference when you make your call and visit.
3. Role play the telephone call and the visit with your spouse, friend, or students, with the other party playing the role of the agency or business contact and asking you different types of questions – informational, hostile, curious, indifferent, busy.
4. Have already at your fingertips the answers to many questions the business or agency contact is likely to ask you. This requires some advance planning. Industries or agencies are likely to want to know the following from you before they agree to host a field trip;
   - How old are the students?
   - How many will be coming?
   - How many adult chaperones will there be?
   - Will there be any discipline problems?
   - What days and hours can they come?
   - How long will they want to stay?
   - Do the students' parents know about and approve the trip?
   - What do the students want to see?
   - With whom do the students want to talk?
   - Will the students be bringing cameras or tape recorders?
   - How will the students be getting here and back home or back to school?
5. Be prepared to be flexible. If the contact says the business or agency can accommodate only six students just on Saturday mornings, indicate you will examine this possibility with your students and call back. If the contact wants more adults present, indicate you will try to work that out and will call back.

6. Try to think of ways in which the trip will benefit **the agency or business.** Do a little "selling," if you have to. For example, perhaps the trip will provide the agency (e.g., police, courts, prisons, juvenile detention centers, parks department, welfare department) with a little free public relations. The trip may also help a business (e.g. toy stores, food chains, automobile companies) with some free advertising. You can even have the school system's purchasing agent make the initial contact, since many businesses may want to become or remain the school's supplier of toilet paper, food, desks, office supplies, and heat.

7. Think in advance of the objections a particular business or agency may raise and of ways to meet their concerns. For example, have other classes or small groups of students taken field trips in the past to an agency? If so, is the agency likely to feel "saturated" with field trips and tired of them? It might be valuable to let the agency know that the trip will be related to career education, that your students may be interested in exploring potential job opportunities with the agency, and that they have been deeply engaged in the study of the occupations and operations of the agency.

8. Have ready the questions to which **you** need the answers before you call or visit. This is important, because it will save you and, more importantly, the agency or business the trouble of having to talk with you a second time and will also indicate the seriousness with which you view the trip – you've obviously given it a lot of advance thought. Questions you may want to ask include:

   - How many students can the agency or business accommodate?
   - Can more than one small group visit the site on different days? at the same time?
   - What legal problems are there in bringing students into the site? (See the discussion of this problem below.)
   - Should the students wear any special type of clothing (e.g., old clothes for visiting a steel plant)?
   - Can the students also ask questions of some of the employees? In particular, can they talk to _____?
   - Can the students take notes during their tour or bring tape recorders or cameras?
   - How much time will they have for the tour?
   - How much time will they have for interviewing employees?
   - Is there a translator or someone who speaks Spanish?
   - Will students on crutches have difficulty getting around?

While all these techniques for enlisting interest in your activity on the part of agencies and businesses can be helpful and at times essential, much will depend ultimately on your own personal style of talking and interacting with people. In general, the more consideration and awareness of the agency's or business' feelings and concerns you can show, the more likely you are to be successful in winning its approval for a field trip or interview.

Logistics of Field Trips and Interviews

While you can certainly participate in chauffeuring students to businesses and agencies for their interviews and tours, unless you have a school bus at your disposal, a good deal of free time, and considerable patience, you are not going to be able to take your students on more than one or two trips a month. Your major resource for transportation will therefore be parents. Make use of them. Not only will they be doing you a favor, they will also be helping their children and developing a sense of involvement with the school.

Often, if you tell the class you need drivers or chaperones, students themselves will offer the "services" of their parents to take them on a trip. You can directly ask students to ask their parents to drive them to the field trip site or to accompany them on the bus or subway. When you do this, you will get better results if you write the parents a personal note indicating the purpose, nature, and time of the trip and why you need their assistance. Follow up any positive responses with a phone call to confirm the time and place to meet with the students and pass this information on to the students.

Legal Issues Involved in Field Trips

Generally, industries and businesses have their own insurance which protects them if a visitor is injured while on their property. However, this does not mean that industries and agencies particularly want to risk such a suit nor that your students and their parents are particularly anxious to initiate one, should an accident occur. Therefore, you will want to inquire of your school superintendent or principal what legal coverage you and your students have in case you, they, or their parents should be injured during a field trip. For example, in many communities students can sue **you** if you are driving them to a site and get into an accident.

The most effective way to protect yourself is to secure for each and every field trip a signed letter of approval from a parent or legal guardian giving his or her approval for the student taking the trip. The letter must indicate the purpose, date, and destination of the trip. Give copies to your students and tell them they can't go on the trip unless you have a signed copy returned to you **before** the trip. You may also want to consider sending the letters to their homes.

When all is said and done, you may have to run the risk of a car accident and lawsuit if you really want to provide the field trip. The important consideration is to learn what legal risks you, your students, and any chaperones are running, take what precautions you can to minimize them, and make your decisions with full knowledge of the potential consequences.

Three Key Resources

When you set up field trips and interviews, you have three key resources you can call upon for assistance: students, parents, administrators and guidance counselors.

Students: When possible, let your students do as much, if not all of the work in arranging for field trips and interviews. Making contacts with businesses and agencies will in itself be a learning experience for them. They may find it helpful to read this section of the manual on "Liaison with the Community." They may not be as effective as you, because some agencies and businesses may feel less compunction about turning down students' requests than in turning down a teacher's. However, even if students fail in their attempts, you can pick up where they left off and set up the tour.

Parents: We have already stressed the utility of using parents to help transport and chaperone students, the importance of securing their permission for any field trips their students plan to take, and the likelihood they can help identify and even contact businesses and agencies where they or their relatives are employed. You can also enlist parents' support and assistance by formally writing them early in your unit to outline what you plan to teach, how you expect to teach it, and why. Invite them in this letter to phone or visit you at school for further information. Most parents will appreciate being spontaneously informed and consulted on their children's education. You can also invite parents to observe your class and to share with students in appropriate activities their own work experiences (although you should be sensitive to the feelings of students who will be embarrassed in front of the other students by having one of their parents come to class).

Administrators. As already indicated, school administrators and guidance counselors can also be of assistance with the contacts they have with businesses in the local community. In addition, your effort to enlist their support and assistance will be simplified if early in your unit you inform them, like parents, about your plans. Not only will you thereby have "read them in" in advance to your course plans, you will also have provided them with the necessary background information to respond to any telephone calls from parents or other members of the community questioning the legitimacy of your field trips, interviews, or polls. Finally, you can solicit suggestions from administrators and guidance counselors on what they would like included in career education activities.

After the Trip

After each field trip write a letter of thanks, and have each group of students or class do the same, to each key person in the business or agency who made the trip possible. Not only is this a simple act of courtesy, it also ensures that future students will meet with a warm response when they try to set up a trip to the same site. Also thank any guidance counselors, administrators, and parents who provided assistance. At the end of a series of trips, you can write a letter to the editor of the community newspaper to publicly express your thanks to the parents who helped you and to the businesses and agencies which provided tours and interviews.

The following check list may be helpful to you as you arrange for field trips and interviews. You can also duplicate copies for your students each time they arrange their own field trips or interviews.

CHECK LIST FOR ESTABLISHING LIAISON WITH THE COMMUNITY

____ I. IDENTIFY PLACES AND PEOPLE TO CONTACT

1. Identify site by using

____ a. Published list of interested agencies
____ b. Personal contacts
____ i. School administrators
____ ii. Students
____ iii. Students' parents
____ iv. School guidance department
____ c. Advertisements in school yearbook
____ d. Yellow Pages
____ e. Business associations

____ 2. Identify whom to write and/or telephone

____ II. ENLIST INTEREST OF TARGET BUSINESSES AND AGENCIES

____ 1. Send letter

____ 2. Plan for problems

____ a. Seek advice
____ b. Seek contacts
____ c. Role Play
____ d. Have answers ready
____ e. Be flexible
____ f. Identify how you can help the site
____ g. Foresee objections
____ h. Prepare your questions
____ i. Adopt a firm but sensitive posture

___ 3. Telephone

___ 4. Visit

___ III. PLAN LOGISTICS

___ 1. Transportation

___ 2. Chaperoning

___ IV. CONSIDER LEGAL ISSUES

___ 1. Question site contact

___ 2. Talk with school administration

___ 3. Secure permission letter from parents

___ V. UTILIZE FULLY ALL RESOURCES

___ 1. Students

___ 2. Parents

___ 3. School administrators and guidance counselors

EFFECTIVE CAREER EDUCATION TEACHING METHODS

This resource contains suggestions on how you can most effectively implement the teaching methods suggested in the activities. The teaching methods incorporated in the activities are among the best instructional strategies for enabling students to become aware of different occupations, develop self-awareness, explore occupations, and make tentative career decisions.

The methods discussed are:

Role Plays	Polls	Independent Study
Games	Small Group Discussions	Research
Field Trips	Class Discussions	Volunteer Work
Interviews	Peer Teaching	Writing

ROLE PLAYS*

Role Playing is an extremely valuable method of learning about careers.

Essentially, role playing is an activity in which one person pretends he or she is someone else and acts in the way he or she believes that the other person would act. Thus, a student can act as if he or she were an employer, an employee, or a recently unemployed worker – that is, he or she can play the **role** of these other persons.

Utility of Role Playing for Career Education

Role plays have three great advantages in career education:

1. Role playing offers an unusual opportunity to **promote understanding and empathy** between types of people who often have difficulty communicating effectively with one another, such as consumers and salespeople, citizens and politicians, employers and employees, parents and children, and teachers and students. In career education, students' understanding of the problems and attitudes of executives, managers, employers, employees, union members, strike breakers, labor leaders, unemployed workers, underemployed workers, and other groups can be promoted by role playing these people.

*For further readings on role playing, consult one or more of the following books and pamphlets.

Boocock, Sarane S., and E.O. Schild, eds., *Simulation Games in Learning*, 1968, hard cover, $8.95. Sage Publications, Inc., 275 South Beverly Drive, Beverly Hills, California 90212.

Carlson, Eliot, *Learning Through Games*, 1969, hard cover, $4.50. Public Affairs Press, 419 New Jersey Avenue, S.E., Washington, D.C. 20003.

Glazier, Ray, *How to Design Educational Games*, 1969 (fourth edition – 1973), soft cover booklet, $2.50. Games Central, 55 Wheeler Street, Cambridge, Massachusetts 02138.

Inbar, Michael, and Clarice S. Stoll, *Simulation and Gaming in Social Science*, 1972, hard cover, $10.50. The Free Press, A division of the Macmillan Company, 866 Third Avenue, New York, New York 10022.

Tansey, P.J., and D. Unwin, *Simulation and Gaming in Education*, 1969, hard cover, $5.00. Harper and Row, Keystone Industrial Park, Scranton, Pennsylvania 18512.

Twelker, Paul A., ed., *Instructional Simulation Systems*, 1969, paperback, $6.75. Continuing Education Publications, Waldo Hall 100, Corvallis, Oregon 97331.

Zuckerman, David W., and Robert E. Horn, *The Guide to Simulation/Games for Education and Training*, oversize paperback, $15.00. Information Resources, Inc., P.O. Box 417, Lexington, Massachusetts 02173.

2. Role playing allows students to **experiment with occupational roles and personalities** they may be unable to assume in real life (due to lack of confidence, peer pressure, etc.). For example, the extremely shy students who plays the role of a very outgoing person his or her own age may get the opportunity to forget momentarily his or her shyness and experiment with a new role. Role playing allows students to "try on" personalities and roles in a non-threatening situation.

3. Role play encourages the development and expression of **feelings** about careers. This is particularly important in a curriculum dealing with an emotionally charged area such as how to support yourself for the rest of your life.

Designing Role Plays for Career Education

1. When to Use Role Plays

Role play is most appropriately used to illustrate and explore relationships involving problems between people about work and their attitudes toward career issues. Some examples of problem situations that lend themselves well to role plays are:

- Labor union leaders "negotiate" a new contract with leaders from management.
- Members of a community "debate" the type of new industry, i.e., new jobs, to be allowed into the area or solicited to enter the area.
- Minority person or woman seeks to "persuade" a company to hire a certain percentage of minority or female employees.
- A qualified woman "applies for" a job as an automobile mechanic, construction foreman, etc. and is kidded or harassed by her potential male colleagues.

2. How to Write Role Plays

The most important task in role play is getting people emotionally involved in their new roles. To help achieve this you must provide the students with written "role profiles" or descriptions of the person whose role they will adopt. Each role profile should:

- be as brief as possible
- be written in the second person ("you believe you are the most qualified person for a job but someone else got it", not "The person you are playing thinks he is the most qualified . . . "); and
- be given to students in advance of the actual role play if research or familiarity with the part is necessary.

The role profile should include enough concrete details so that the role is clearly structured and focused and the student understands the character he or she is to portray. To ensure this, the role profile should provide the student with:

- The motives and goals of the role ("You want your wife to stay home and let you support the family");
- Obstacles in the way of achieving your goals ("Your wife claims that she is bored now that the children are married"); and
- Enough incidental information about the person to make him or her seem real to the student ("You are 42 years old, have less education than your wife, and like to be the boss in your home").

There is another type of less structured role profile which requires the participant both to **define the character** he or she plays as well as to resolve the problem. This type of more open-ended role play

enables students to explore several different identities as they try to resolve the problem presented in the role play situation.

3. How to Write a "Scenario"

A scenario is a capsule history of the events that precede the situation that is going to be role played. The scenario contains all the information that is common knowledge to all players. The last sentence sets the stage for the action of the role play. ("This husband comes home to find his wife looking up the telephone number of an employment agency.") You or your students can write you own scenario or take a published story and omit the ending, with the students role playing possible completions.

How to Teach Role Plays

- **Introducing role playing to students:** Always begin by explaining what role playing is and what it is intended to accomplish. Give an example. You can then engage in "warm up" activities with students who are unfamiliar with role playing. You can, for example, have students respond **in writing** to several scenarios taken from newspapers, articles, or books or to scenarios which you or your students develop. You can also relate an incident similar to the one in the role play and ask students, "Have you ever been in a situation where you . . . etc." After students have talked about their experiences in this example, you can move on to indicate that they are going to role play a story similar to the one they just discussed. Finally, you can have your students practice with a sample role play in which they play their parts from their seats, using dialogue and no action. (If students are unable to act out role plays even after several attempts, in-seat role plays can often be profitably used.)

  Above all, treat role playing as a serious learning activity both when you introduce it and when you supervise it. Otherwise, students may view it simply as "fun and games," not as the potent learning method it is.

- **Moderating a classroom role play activity:** When introducing an actual role play activity, begin by passing out and/or explaining the scenario to the whole class. Ask for volunteers to play the roles. Avoid selecting students who volunteer to play roles that may be too emotionally upsetting for them – for example, letting a student whose father has recently been killed in a job related accident play the role of the union inspector discussing job safety requirements at a negotiation session.

  Pass out the appropriate role profiles only to each participant.

  Before any action takes place, instruct observers to save all comments and questions until the role play is over. Observers should be instructed to think about how **they** would act were they role playing. Instruct participants that they have the right to call a "cut" in the action anytime they want without having to say why. This is to allow participants who feel they are getting too emotionally involved an easy "out" from what may, on rare occasions, be an unpleasant situation. You also need to be alert to the action and feelings of the role play and should not hesitate to call a "cut" if you feel the role play is arousing too much anxiety.

  While action is in progress, do not inhibit it by commenting on or altering what is being said or enacted.

  Observing students can participate in longer role plays as "reporters" who write down and/or later verbally describe what they saw and heard, comparing their accounts with each other and with what the role players felt occurred.

The role play ends when participants have reached a logical ending point or you "cut" the action because it is dragging or has become irrelevant. However, students can and often should repeat the completed role play as it stands with different participants or with new role profiles. Such repetition enables students to experience and observe a range of possible solutions to the problem presented in the role play.

- **Following up a role play:** Students should be encouraged to develop and use their own role plays and scenarios or to revise the ones you develop. Once attuned to the technique, students can often create role plays and scenarios about work issues that contain a realism and relevance that you may find difficult to attain.

  When an individual or series of role plays is over, focus in the ensuing discussion on:

  – What the students' feelings were as they role played;

  – What different actions the observers might have taken were they in the role play;

  – What their attitudes were toward the other players;

  – What the participants learned about the role they were playing and about the other roles.

  During this discussion avoid giving your opinion of whether the role played solution was "right" or wrong but concentrate instead on eliciting **alternative** solutions.

GAMES

Educational games harness the student's natural motivation to "play" and direct it for educational purposes. A game is a contest between adversaries (players) who act under constraints (rules) to achieve an objective (win). The player's "business" in a game is simply playing it to win; in educational games, learning is a natural by-product. The reason for this is that in order to play the game, players must learn the rules in order to simulate a real-world process. Thus, by learning the rules of the game, players learn the process that is being taught. For this reason educational games are highly motivating; initially a student need not even be interested in the subject at hand so long as he enjoys playing games.

There are several types of educational games, including role-play games, board games and drill games.

- **Role play games** are used to teach processes involving much negotiation, compromise, conflict, etc. – in general, human interaction. They differ from role plays, however, in that they are usually more structured (focusing on processes, not simply situations) and a winner (or several) is identified.
- **Board games** closely resemble commercial entertainment games in the paraphernalia they utilize (chips, boards, play money, etc.). They are applied to processes which benefit from graphic representation, such as various job levels in the manufacturing industry (or office occupations, etc.).

Most games are hybrids, in that they utilize role playing **and** boards, charts, etc. to record the progress and outcomes of human interactions.

- **Drill games** are placed in a separate category because the rules of the game do not necessarily simulate real-world processes and issues. Rather, the basic element of competition, common to all games, is utilized for motivational purposes in teaching or reviewing facts and concepts. For example, a game distinguishing job titles in relationship to the fifteen job clusters is a motivating

way of teaching and/or reviewing the subject. Drill games generally utilize boards, cards and other paraphernalia although the spelling bee is a classic example of one that does not.

Utility of Game Play for Career Education

Games are useful in career education for at least six important reasons:

1. Educational games (even drill games) involve decision making, a necessary skill in selection of a career to explore or enter. Games encourage students to weigh the consequences of alternative decisions and develop effective strategies for winning. An important follow-up to game play is the discussion on why students acted as they did, what strategies proved effective, and what influenced them to choose one course over another. Students thus have the opportunity to "practice" decisions without actually having to suffer real-world consequences.
2. Educational games compress time and experience and therefore expose students to **more** decision making opportunities sooner than they would face in real-world situations and, most important, provide quick feedback on how effective their decisions were. In addition, in most games there is usually no single right answer. Players must therefore **experiment** with many alternative strategies and decisions to discover which are effective under what circumstances.
3. Games are motivating. Most students play to win. Therefore, drill games especially lend excitement to what might otherwise be boring review exercises. Games also can serve as springboards for further study.
4. Games are "self-evaluating." Poor game performance can suggest the need for further play (review) and/or other forms of reinforcement of learning. Although it is not their primary application, games can thus represent a diagnostic and evaluative tool. Another aspect of this is that effective game performance means success in the game. Students, by winning or doing well, are rewarded intrinsically, rather than extrinsically by the teacher.
5. Games provide special opportunities to learn and to perform well for students who have poor reading skills or other learning handicaps. Written information is often minimal; what is included must be utilized for successful game playing. Motivation to read is thus built in since students **need** the information to play the game. Students who consistently fare poorly in conventional classroom activities often do well in games because effective strategies, whether arrived at by conventional or unconventional methods, or with skills normally not cultivated in class (such as negotiating), are rewarded. Thus, games often motivate priviously apathetic students to improve poor student self-image and do better in non-game activities as well.
6. Games integrate students of diverse ability levels and encourage peer learning. Students learn the rules of the game from each other as they play and pick up good strategies from other players.

Teaching Classroom Games

- **Introducing a game:** Display each different item of the game materials to the group(s) before play commences and explain the function of each very briefly. Then assign roles (where appropriate) and distribute rules and other materials to players. Where a game involves few players, assemble several groups of players and distribute a set of game materials to each. Simultaneous play by the entire class is desirable, because if any one groups plays, the rest of the class will generally want to watch rather than participate in other activities.

  Consider mixing students of different ability levels, particularly if teams of players perform as one actor. Slower students will learn from more able ones. Where a game calls for each player to act as an individual, the teacher may wish to keep the ability levels fairly close so that one or a few players are not at an obvious disadvantage.

Demonstrate some sample game moves by asking one or a few players to select their first action.

- **Moderating play:** Circulate among the players and clarify rules if they ask questions. Where possible, encourage students to come to their own decision about an ambiguous rule in terms of what would be logical and accurate for the process under study. Resist the temptation to correct a student about to make an incorrect or poor move. The game itself usually penalizes errors and rewards correct or effective moves. Students must experiment and make decisions in order to learn from the game. However, if play is slow, suggest a move or a stretegy to a player or a group to catalyze the action. Encourage experimentation but avoid suggesting all the options. Leave that to student exploration.
- **Post-game follow-up:** Determine the winner(s) of the game according to the scoring rules provided. Usually, players are rated on a continuum, so that instead of one winner and many losers there are graduations of effective players. Thus, it is unlikely that many individuals will feel themselves "the losers' and be hurt thereby. Winners in different groups can be announced to the class and can be asked to compare strategies.

  A good way to begin a follow-up discussion is to ask the winner(s) what he or she did that was particularly effective, or, in other words, why he or she thought he or she won. Ask students what they would do differently next time, what was their best move, worst move, etc. To synthesize the actions in a game, start with the concrete details of play. Rather than asking "What did you learn?" (the usual response is "Nothing."), ask "What did you do?"

  Next, move on to analyzing the alternative decisions available to players, the consequences of various decisions, influences on the particular decisions they made, etc. This leads directly into discussions of issues in terms that are defined more broadly than the specific details of the game.

  Encourage students to change the rules (or other items) in the game which they feel are inaccurate or which represent interesting variations or questions about a process, and let them play it again.

  You may wish to stage a class "play-off" or even one for the school at large, if more than one class is working with the same career unit at the same time **and** if the game may be profitably replayed. (Some games, particularly review games, can be learned **in toto** and would not offer new learning to players who mastered them. These are games with a finite number of facts under review and are probably not profitably replayed.)

  Finally, you might put your best players against some parents or other adults in order to demonstrate to both groups how much career information was learned.

FIELD TRIPS

The heart of a good field trip is the **immediacy** it provides – that is, the first-hand observation of activity that normally is learned about in schools only second-hand through readings, lectures, or discussion. Therefore, the more unique the learning experience will be. However, the extent to which students benefit from their observations depends significantly on how much they have prepared for the trip; otherwise, they may fail to observe many activities or misinterpret them because they have not been "primed" to be alert for them. Finally, the value of a field trip is enhanced when follow-up discussion takes place in which students share their observations and learnings and the class is forced to identify career components of the occupations they observed.

Where to Go on Field Trips for Career Education

This depends largely on the availability of community resources, transportation, and time. Some common sites entire classes or small groups can visit include:

- factory
- office building
- health facility
- construction site
- bank
- airport, bus or train station, seaport
- retail store
- personnel office
- Employment Security Office
- laboratory
- bakery, restaurant
- hotel, motel
- recreation site: theater, amusement park, sports facility
- repair shop: cars, appliances
- farms or fishing dock

How to Identify and Contact Places and People to Visit

Many cities and school districts provide a list of companies and agencies that encourage field trips, including times of availability and number of students desired. It is worth contacting your State Department of Education, local Superintendent of Schools or state or school audio-visual department to see if such a list has been compiled. Some localities that do provide lists are:

Los Angeles City Schools
Baltimore City Public Schools
Cuyahoga County Schools (Ohio)
Antioch Unified School District (California)
Marin County Schools (San Rafael, California)
Washington, D.C. Public Schools
Milwaukee Public Schools
New York City Public Schools
Schenectady City School Districts (New York)

Other sources you or your students can contact for help in identifying people and places to visit include:

- students' parents
- school administrators
- Chamber of Commerce
- Rotary Club
- Yellow Pages
- local business organizations and associations
- Better Business Bureau
- local, state, and federal public information officers
- labor unions

Parents in particular are an excellent source for identifying people and places to visit, because as employed persons themselves (usually), they can often easily arrange for students to take field trips where

they work or, at least, put students in touch with responsible persons where they work who can organize a field trip.

Once you or your students have identified people and places to visit, there are several ways to go about contacting them and stimulating their interest in your project. While sending a letter can be helpful, the best approach, where time permits, is to (1) send a letter indicating you plan to call for an appointment, (2) telephone to set up a time for an appointment, and (3) make a visit to the responsible official. You may need to combine tact with persistence in locating the appropriate person to talk to and then to encourage him or her to host a field trip. On the other hand, many places will welcome a visit from your students. (See the second resource, Liaison with the Community, for further discussion of these issues.)

When possible, have your students set up their own field trips by writing their own letters, making their own calls, and making their own preliminary visits. This will not only relieve you of some of the burden, it will also provide a learning experience for the students.

How to Prepare for a Field Trip

Students should prepare carefully for a field trip by reading available literature on the place and persons they will be visiting, drawing up a list of specific questions to ask the people they will be talking to, and compiling a list of observations they hope to make. The following are sample questions students might ask of an automobile or appliance repair person whose facility they plan to visit.

QUESTIONNAIRE FOR REPAIR PERSONS

1. What is your specific job title? _____
2. In general, what do you do in your job? _____
3. Which of the following skills, if any, are important for success at your job?
   writing☐ reading☐ listening and understanding☐ oral communication☐
   questioning☐ notetaking☐
4. Could you describe why these skills are important to your job? _____
5. Where and how did you learn these skills? _____
6. Do you feel you could have learned them better? _____
7. What other special skills are needed in your job and where did you learn them? _____
8. In general, what advantages and disadvantages does your job offer you? _____
9. Thank you for your time and interest. Before I (we) go, are there any other comments you would like to make about your job that might help us to understand what skills are needed to do it successfully?

The following is an example of an observation instrument students might develop for use while watching a journalist at work:

OBSERVATION INSTRUMENT FOR JOURNALISTS

1. What are the different things the journalist does? Keep a running list of them as you observe on the back of this page.
2. Whenever you see the journalist using one or more of the following English skills, write down next to the skill exactly what he or she is doing that involves using the skill.

ENGLISH SKILL	JOURNALIST'S ACTIVITY
a. Writing	1) (For example, an article.)
	2) _____
	3) _____
	4) _____
	5) _____
	6) _____
b. Reading	1) _____
	2) _____
	3) _____
	4) _____
c. Editing	1) _____
	2) _____
	3) _____
d. Speaking Publicly	1) _____
	2) _____
	3) _____
e. Interpreting	1) _____
	2) _____
	3) _____
	4) _____
f. Questioning	1) _____
	2) _____
	3) _____
g. Taking Notes	1) _____
	2) _____
	3) _____

During the field trip, students should observe and listen carefully, ask questions, and take notes. After a trip follow-up discussion is essential to reinforce or supplement learnings and clear up any misunderstandings. Either in small groups or in a class discussion, students can discuss:

- what occupations they observed;
- what they learned about these occupations in terms of training needed to enter them, tasks and responsibilities involved, satisfactions and disadvantages, fringe benefits, salary and promotion schedules, and other employment related issues;
- what students hoped to learn but didn't, and where they can find this missing information;
- what interests the trip stimulated that students want to pursue further and how they can do so.

INTERVIEWS

Interviews should be an integral part of a career education curriculum for three reasons:

1. There are many fascinating and informed people in most occupations who are very responsive to the inquiries of students (see next page for potential interviewees).
2. Interviews are an excellent way to obtain firsthand information from people who have experienced career problems or been in direct contact with those who have.

3. There are a variety of opinions on the numerous work issues with strong spokespersons for all of them, whom students can listen to and question about the bases for their beliefs.

When preparing students for a career related interview:

- allow as many small groups as are interested to conduct interviews and compare findings.
- require the students to study the appropriate career literature about their chosen topic in advance so that they can then draw up a list of critical questions to ask. Some of these questions may seek factual information, but questions, when possible, should deal with areas of controversy or difficult-to-obtain information. Neither the interviewee's nor the students' time should be wasted on questions that can be answered by glancing at a career source book.
- have students themselves, if possible, contact the interviewee, arrange for an appointment, and request permission to bring a tape recorder;
- mention that how students dress for and how they behave during the interview is their business but to keep in mind that these factors can influence the success of their interview and the potential for future interviews with that source;
- encourage students to begin the interview by asking the interviewee his or her exact title, position and duties. This information is useful to gain an idea of how much credence to place in the interviewee's statements and to help students through the nervous first few minutes;
- instruct each student to take notes independently during and/or immediately after the interview since one "reporter" may not be able to write down everything that is said and different students may interpret what was said differently; and
- encourage students to ask critical but polite questions that probe inconsistencies, hypocrisies, unaccounted for results, successes and failures, and to ask open-ended, as well as specific questions, such as, "What's exciting about your job?"

Upon completion of an interview, the students can:

- evaluate the results in such terms as:
  - What career topics did the interviewee seem most informed about? Why?
  - What new information and ideas about the world of work did you learn?
- report their findings and **critical interpretations** to the class. These reports should always include the groups' **opinions** about what they learned; and
- write up their findings into an article for submission to the school and local community newspapers, if there is time. Permission should first be obtained from the interviewee.

One other type of interview students can conduct is the telephone interview. If interviewees are too busy or inaccessible for person-to-person interviews, they may be agreeable to answering questions over the telephone by appointment secured in advance. Students may also want to interview several persons to compare opinions or attitudes and can use the telephone for this purpose, too.

Types of individuals that students may want to interview include:

- Parents, relatives, and friends.
- Personnel or employment security interviewer
- Equal employment opportunity worker
- Manager of major business or industry
- Owner of small business or industry
- Person in authority in large retail organization

- Owner of small retail operation
- Worker in large industry or store
- Worker in small store or shop
- Out of work professional person
- Out of work non-skilled person
- Retired worker
- Union worker
- Worker in non-union situation
- Workers in various clusters: manufacturing, health, recreation, science, etc.
- People who work with other people
- People who work with ideas
- People who work indoors
- People who work out of doors

You can also refer to the section on Field Trips for agencies and businesses whose employees can be interviewed.

POLLS

Polls and questionnaires can be extremely useful and exciting in a career education curriculum. By administering, collating and interpreting polls on careers, students can achieve three career education goals. They can:

1. learn about the variety of attitudes toward, beliefs about and behaviors in work situations in a realistic and meaningful way;
2. learn to make and understand correlations and thereby realize that opinions and behaviors on career issues can be dependent on age, sex, ethnicity, and other factors; and
3. develop skills in the areas of questioning, communication, validity, writing, and interpretation of data.

Construction of Polls

Students should be encouraged to develop their own polls or questionnaires but should be cautioned to consider several factors when doing so, including:

- phrasing questions in the way most likely to get an honest response in this potentially "touchy" area;
- avoiding questions that require a written response (respondents are often pressed for time, lazy, or afraid of hand-writing detection);
- avoiding too long a poll (for the same reasons);
- assuring respondents of anonymity and seeing to it that the poll in fact cannot reveal names;
- investigating desirable and/or interesting relationships, such as sex, race, age, economic status, and political preference. These relationships, when tabulated after a poll has been taken, are called correlations (e.g., there is a positive correlation between economic position and level of education attained; that is, more middle and upper class people have a college education than do lower middle and lower class people);
- selecting the proper sample of people to be interviewed so that these correlations can be made. If students want to see if women prefer office work more often than men, they must be sure to include enough men and women in their poll to make such a comparison;

- deciding how many people should be polled (both conducting the poll and tabulating correlations by hand can take hours);
- testing the poll on the rest of the class to remove the "bugs," such as confusing questions or too limiting a choice of possible responses to check or circle;
- learning what a "representative sample" is, such as 10% of the school body; or .01% of the community – that is, a sample that is large enough to permit the poll taker to generalize about the group being polled; and
- discussing strategies for introducing themselves when the door is opened so that respondents don't slam the door shut or otherwise refuse to be interviewed. (Students might wear large name cards identifying themselves and their schools, for example.)

Administration of Polls

How honestly a world-of-work poll is answered may depend on how it is administered. Some student respondents may be more honest and serious if the poll is administered by other students rather than by a teacher. On the other hand, faculty may answer more honestly if they are given the poll at a staff meeting by the teacher rather than if students stuff faculty mailboxes with the poll. Sometimes it is most effective to have a principal or dean administer the poll to the faculty. Students can also take polls home to their parents and/or knock on doors.

Tabulation and Interpretation of Polls

Students may need help drawing up a matrix to produce their correlations. The teacher should provide this assistance immediately, before students have wasted time making unnecessary tabulations. Sample matrices are:

	Men	Women	College Graduates	High School Graduates	Less than High School	People Job	Thing Job	Idea Job	Ages 18-25	25-45	45-65
Satisfied with job tasks and salary											
Satisfied with salary but not with job											
Satisfied with job tasks but not salary											
Unsatisfied with job tasks and salary											

	Men	Women
Satisfied		
Partly Satisfied		
Unsatisfied		

Students need to be reminded that poll statistics rarely explain **why** certain people hold certain attitudes and beliefs or act in certain ways. It is the researchers' job to **interpret** the findings.

When one or more small groups have conducted the poll, they should explain its results and interpretations to the rest of the class.

Below is an example of what a short poll might look like.

This is a poll drawn up and conducted by students at _____ School. It is being used as part of a course of study on career education. We would appreciate your honest answers to the following questions. Please do not sign your name. Thank you.

Age: (Circle appropriate age level)

under 25 25-44 45-64 over 64

Sex: (Circle appropriate sex)

Male Female

Years working on this job: (Circle one)

less than 1 1-2 3-5 6-10 over 10

Circle response with which you agree most.

1. My job salary is satisfying to me.

   agree disagree

2. My job tasks are personally satisfying.

   agree disagree

3. My working hours are:

   too long too short just right

4. I enjoy working with my colleagues:

   a lot some a little not at all

After a poll has been completed and the results analyzed, students should present their findings to the class. They can also submit their results and interpretations as an article to the school or community newspaper. Finally, students can read other polls of adults and high school students and compare them with both their own questions and their own findings.

SMALL GROUP DISCUSSIONS

One of the most useful teaching methods for career education is to break classes down into small groups of three to six students for intimate discussions.

Utility of Small Group Discussions for Career Education

There are four major reasons why small group discussions are useful in career education:

1. Small groups offer a more receptive setting than class discussions for students to express their feelings and attitudes about occupations. Students often feel freer to express anger in arguing with a peer than with a teacher and less inclined to hide their real feelings about jobs since they are less likely to try to "con" their friends.
2. There is much more concern in small groups, as opposed to class discussions, with sharing opinions than with impressing you or supplying you with the "right" answer.
3. In small group discussions students can follow the natural flow of their concerns about occupations and work – moving freely from one topic to another, unfettered by feelings that they must stick to one topic only. In addition, small groups offer a better opportunity to follow up arguments than a class setting where 25 students may all want to "chip in."
4. Small group discussions develop several important skill areas needed to become aware, explore, and make decisions about occupations and careers, including cognitive skills (describing, analyzing, questioning, evaluating), affective skills (feeling concerned, feeling responsible, accepting, empathizing), and communication skills (arguing, influencing, listening).

Forming Small Groups

A useful approach to structuring small discussions around career issues is to present students with a problem situation and have them record, in no more than one page, how they would solve the problem. For example, rather than ask students to "write your opinion on whether women should have equal rights in the job market," tell students: "You are a state legislator and a vote is being held on the Equal Rights Amendment for women in the work force. How do you vote? Why do you vote that way? Or if you don't vote, why not?"

Two other approaches to obtaining student positions on a career issue are to place them in the position of a "Dear Abby" columnist for a newspaper or of a community hotline answering service. You can ask students to respond to letters seeking advice, such as "Dear Abby, I have always wanted to be a doctor. I get good grades and my teachers say I could do it, but my father says that a girl should take care of the home. He says that if I like medicine I should become a nurse. What shall I do? Bewildered."

These position papers should be written a day or two before the actual small group discussion so you have time to assign students carefully to small groups on the basis of their positions.

Several different considerations need to be balanced in forming the best possible small groups of students to discuss career issues. One alternative is to let the students form their own groups. This may create problems if friends stick with friends, with the result that students are not exposed to different

points of view. In addition, introverted students may end up together, resulting in a continuous silence.

A better alternative is for you to make the assignments to the groups. Try to consider the following factors:

- The sex composition should be arranged so that no one is embarrassed by being the only boy or girl in the group, except for boys and girls who don't mind (and even relish) being the only member of their sex in a group.
- All the talkative students should not be clustered in one group and all the silent students in another.
- Each group should be so balanced that conflicting points of view are represented about the career issue being discussed.
- Depending on the class and your own feelings, it is often wise at the outset not to place several discipline problems in the same group.

Arranging the room for small group discussions can be left up to your discretion and the limitations of the facilities available. One useful method is to assign groups to different parts of the room and when they get there have them turn the now unoccupied desks into small circles.

Structuring the Discussions

When you have broken the students into small groups, you can return the position papers and pass out written instructions specifying what the groups are to discuss. These instructions can be put on the blackboard, if necessary. But some form of **written** directions is advisable.

You can assign the groups at least two tasks.

1. Ask them to try to resolve their differences on the career issue. (E.g., is money more important than job satisfaction in choosing a career?) If they can resolve the issue, they write their common solution on the blank paper. If they cannot agree, they can write down all the different positions they still hold.
2. Also ask them to discuss why they believe that their position is the "correct" one. These reasons can also be recorded. Normally, the attempt to resolve different positions involves consideration of why these positions are maintained, but it is useful to instruct the class explicitly to probe into the reasons behind each student's position.

While these discussions are in progress, you can move from group to group listening in, interrupting only when necessary (for example, encouraging a silent group or discouraging truly irrelevant discussion). In particular, watch for a tendency by students to reach agreement at the expense of serious discussion and questioning. You may need to reinforce again and again that students should accept no statements or opinions about work from their classmates without asking them why they believe them, even when there is general agreement. (People often agree on a position for very different reasons.)

Following up the Discussion

At the end of the period, or whenever discussion wanes, collect the papers. At this point, you can pursue at least two options.

1. The small group discussions can be continued in the following class, either around the same issue or some offshoot of that issue that seems to concern the students.

2. A debate can be held between two groups who agree internally but not with each other.

All small group discussions should be followed by informing the class of each group's decisions, preferably by having each group report its results to the rest of the class and then respond to questions and criticisms from the class and the teacher. At times it may be appropriate to ditto the groups' conclusions and pass out a composite set to the class for future reference.

Conclusion

The success of small group discussion depends on many factors, some of which have been enumerated above. Perhaps the most important factor is the selection of issues for discussion that really do concern students. Students should, therefore, help decide what these should be.

CLASS DISCUSSION

Normally, if a class can profitably discuss a **controversial** issue as a class, it can discuss the issue more profitably in small groups. Therefore, whenever possible, use small group discussions.

Class discussions are useful, however,

- when a previous activity requires a follow-up discussion to synthesize what took place. For example, a role play always needs follow-up discussion so that different students' perceptions, interpretations and feelings about what took place can be aired and summarized. Small group discussions also should be followed by class discussion so that students can learn and comment on what occurred in other small groups;
- when you feel that the discussion topic is complex and needs your guidance to assist students as they discuss it; and
- when there are not enough talkative students in the class to make active small group discussions feasible.

When these conditions prevail, there is a type of class discussion that can be particularly effective in a curriculum that deals with controversial areas like attitudes toward the world of work. This is **student-directed class discussion.** In this type of class discussion students are trained to address their comments to each other rather than to you. When, for example, you ask whether racial hiring quotas should be established in companies with low percentages of minority employees, and one student disapproves, the next student comment should be directed at this previous student. In this manner, but at first with constant reminders, you can moderate a discussion so that students communicate **with each other.** If you choose to adopt this approach, you should make it explicit to the students by **telling** them to direct their comments to each other before the discussion begins and **reminding them** to do so whenever necessary. You will soon be able to encourage direct student-to-student communication with a forgetful pupil by a mere wave of the finger in the direction of the other student in the discussion.

You can moderate this kind of class discussion as you see fit, preventing excessive domination by a few students, pointing out circular arguments, and disallowing irrelevancies.

At the end of a class discussion (unless the class discussion was itself a summarizing activity), students should summarize orally or in writing the major points about the occupational issue that have been made and you should give your general impression of what was achieved.

Class discussions are also useful when there is a class consensus on what could or should be a controversial issue, or when most or all students in a class take a certain point of view for granted and have never examined its underlying rationale. Examples of frequently unexamined points of view include the "superiority" of monogamy, monotheism, capitalism, and the nuclear family. Examples in career education include:

- Labor unions are necessary to protect the worker.
- The owner takes the risk so he should take the profit.
- Education always leads to better jobs and better pay.
- Job satisfaction is not as important as a good salary.
- There are some jobs that women just cannot do and where women do not belong.
- A good job involves staying in one company and "working your way up the ladder."

When a consensus exists on an occupational issue, you can provoke a stimulating class discussion by playing devil's advocate and telling your class, for example, "Women make as good hockey referees as men." As students formulate their rationales – and different students may have very different rationales – you can force them to probe deeper and deeper into the foundations of their beliefs. The purpose of this approach is not, of course, to create confusion in the minds of pupils but to require conscious and substantiated rationales for holding strong positions about the world of work.

You may need to make clear to your class that you do not necessarily believe in the position you are advocating to present misunderstanding that may result in parent complaints.

PEER TEACHING

Students teaching other students is one of the most productive and exciting learning processes available to schools. Most teachers at one time or another have noticed students and their own children helping each other with homework and other academic problems. In an effective classroom some student-teaching-student activity is always going on, usually in discussions. This approach can be implemented systematically and becomes very useful in a career education curriculum for three principle reasons:

1. The students being taught often learn more efficiently than they otherwise might because:
   - They often trust other students' opinions and statements in controversial areas like career and life plans more than they trust those of adults and are often more willing to express their own opinions more candidly in front of each other than to a teacher.
   - They can often understand other students' explanations better than they can those of adults since the other students speak the same language and, more importantly, have recently gone through the learning process themselves.
2. The students doing the teaching gain new insights into the issues involved and prompted frequently to do more research and thinking in response to student-learner questions and comments.
3. All students involved come to realize that they have resources that they can tap and skills they can share. This facilitates and promotes learnings about the world of work in all areas.

When older students teach younger ones, there are usually scheduling, administration, and sometimes parent concerns about this approach that need to be dealt with to make it successful. These concerns and how they are handled will vary according to each particular school and community. Once they

are met, both the lower grade and senior high or college or adult teachers involved will need to consider several other factors:

- The teacher-students must volunteer for the assignments. Compulsory teaching assignments usually produce poor results.
- The teacher-students must have a clear idea of:
  - What they are going to teach about careers. This should involve questioning the student-learners to discover **their** concerns about work.
  - How they are going to teach. Options include:

    one-to-one tutoring
    small group discussions
    team teaching
    writing materials, homework, etc.

  - What their relationship to the student-learners should and should not be. Options include:

    authority figure
    primus inter pares
    pal
    older brother or sister
    counselor

  - What the alternatives are to coping with and helping student-learners who express career problems of a personal nature. (E.g. "I'm too dumb to be a doctor.")
- Students must have a reasonable grasp of the career content area and the issues involved prior to teaching, but they should not feel they have to be "experts" in order to help others to learn.

INDEPENDENT STUDY

Independent study, when it flows from student concern, can be **one of two or three best forms of classroom activity** in a career education curriculum primarily because students are bound to have different concerns, and independent study **enables different students to pursue career subject areas that pertain specifically to these different needs and concerns.** Activities in which an entire class must participate may ignore the needs and concerns about career of some and perhaps most pupils. Independent study can help to eliminate this handicap to teaching a career education curriculum. In addition, independent study:

- enables students to make their own decisions both about what career topics they study and how they study them. Decision-making by students in areas affecting their own education is crucial to:
  - the development of decision-making skills and the nurturing of feelings of competence, and
  - motivating students to learn about what concerns them;
- frees the teacher to devote more personal and in-depth attention to individual students; and
- enables students to pursue their concerns about specific career issues in greater depth than in classroom activities because they are free to do research using a variety of approaches (polls, reading, interviews, etc.).

RESEARCH AND REPORTS

Report writing is particularly useful in a career education curriculum for:

- giving more depth and meaning to research by organizing and articulating it into a visible medium;
- stimulating critical and intensive thinking about career issues by demanding a high quality final product; and
- training students in methods for finding answers to significant and controversial career questions.

Ideally, students should be allowed to suggest and report on areas of the work world that interest them. You may want to provide a list of suggested topics.

Places and agencies to contact that may offer research possibilities (literature, interviews, etc.) include:

1. State and city agencies:

   Bureau of Employment Security
   Bureau of Labor Statistics
   Manpower Development Authority

2. Local groups:

   Chamber of Commerce
   Fraternal Organizations, e.g., Rotary, Lions, etc.
   Business and Industrial Professional Associations
   Unions

3. Miscellaneous:

   Newspaper Want Ads
   Employment Agencies
   Personnel Offices
   Leaders in Industry, Commerce
   Yellow Pages

Students should be given a set of written instructions on report researching and writing that consider the following areas:

- length: Length should be left up to the student. A report on career issues should be as long or as short as is necessary to say what needs to be said. Excessive direct quotations should be avoided.
- documentation, footnotes, and bibliographies: Reports should footnote all quotations by author, title, place, and date of publication. The purposes of footnotes and a bibliography need to be stressed: to enable the reader to both verify the accuracy of the statements and to find further literature references for pursuing his own interests.
- charts: Students should be discouraged from wholesale chart and diagram copying unless the chart is useful and a written interpretation of what the chart signifies is included.
- original thinking: Students should be required to include, wherever appropriate, original thoughts they have and personal opinions on controversial areas or contradictory factual statements they have read or heard. Since one of the major purposes of all reports should be to stimulate analytical thinking, such critical thought should be made a major focus.

- sources: Students should be taught to go beyond the use of encyclopedias in conducting their research, to use other reading materials and research methods (interviews, polls, etc.). While frequently written by experts, encyclopedias offer only one perspective on a problem, while much of the information needed in a career education curriculum may not be up to date or found at all in encyclopedias.

Upon completion research papers should be read by the rest of the class or by those students who are interested in the areas researched. If the report was worth writing, it is probably worth reading. Although some students may write very poor reports, they may still be worth reading so that other students can suggest ways to improve them.

Students can read each other's written work after school or during study halls if it is placed in the school library (and kept on file to prevent loss). Students should be given a chance to discuss in small groups, centered around topics of common interest, their reports.

VOLUNTEER WORK

Learning by doing is a potent educational approach. One way to "do" is to engage in volunteer work. Particularly in areas of human behavior, such as awareness and exploration of careers, classroom learning is made more real and meaningful if it is accompanied by real life experiences in the area under study. You can encourage students to engage in volunteer work by informing them:

- that volunteer work, in addition to its altruistic dimension, can be personally useful as:
  - a learning experience about human nature and problems;
  - an opportunity to learn an enormous amount about oneself; and
  - a way to make classroom learning about the world of work more meaningful;
- that volunteer work is desperately needed by many individuals with various problems and by many agencies and organizations seeking to help these people;
- about what public and private agencies in the community need student volunteers and what kind of work is involved with each; and
- about the type of work they can expect to do. The work expected of them may often be menial, but there will still be plenty of opportunity for students to learn about and observe career problems.

You may also want to:

- give students some form of academic credit for volunteer work, such as less homework, a grade, or free class time;
- require students to keep a log of their activities and thoughts about their volunteer work, but not require that it be turned in if the student feels it is a personal document;
- ask students to report to the class on their work at least once; and
- ask students to write articles about their work for submissions to the school and community newspapers.

Some types of organizations that deal with career issues and may welcome volunteers are:

- Health organizations such as hospitals, the Red Cross, nursing homes
- Educational and charitable organizations
- Youth service and recreation programs

- Social service agencies which work with the elderly
- Chamber of Commerce and information-tourist services.

WRITING

It is useful for students to write frequently in a career education curriculum for two basic reasons:

1. Writing stimulates intensive, creative and critical thinking about issues in a way that is often inadequately developed in verbal interchange.
2. Writing creates an opportunity for students to read what their classmates have written and this, in turn, helps the class become aware that **students** have important, interesting and informative ideas to communicate.

In a career education curriculum there are several useful writing modes for students to engage in:

- Position papers stating and defending their stand on a career or occupational issue
- Imaginary handbooks that offer guidelines and opinions on laws, suggest advice to parents, other adults, or teenagers, or indicate desirable courses of action to agencies and institutions
- Imaginary dialogues and interviews between individuals who hold opposing points of view on career issues
- Reports (See section on Research and Reports.)
- Autobiographical and biographical narratives, both real and fictional
- Story completions (Beginnings, middles or endings).

Since the major objective of this type of writing is to elicit student feelings and opinions, you may want to explicitly inform students that grammar and/or spelling will not be corrected. Attention focused on these areas often distracts students from the career issue being discussed and inhibits them from expressing their real opinions and feelings on future written exercises. Rather than risk criticisms of spelling and grammar errors, many students will often write very little, use only words they are sure they can spell, or both.

Try to avoid commenting on students' opinions on career issues in such terms as "that's a good idea," "good," "I agree," "I think you're wrong." When this is done, students become habituated to writing opinions and ideas they think you want to read, rather than what they truly believe. However, students do need to be commended and corrected in terms of their argumentative **techniques.** Students should be criticized on the basis of:

- whether they **supported** their opinions with logic and facts, or at least said their position could not be logically or factually defended;
- whether they took into account and "disposed of" arguments and considerations that **run counter** to their arguments and opinions; and
- whether they have made **untrue** statements.

Student writing is most productive when your attention is focused on whether opinions have been adequately defended rather than on whether you agree or disagree with them.

INDEX OF ACTIVITIES

Social Studies

1. **JOB BANK:** The class compiles a "job bank" based on interviews with parents.
2. **THE LOOK OF THE JOB:** Students construct a collage and examine the interrelations of various jobs within an occupational area.
3. **COOKING, SEWING, AND CLEANING:** Students observe and interview their family homemaker.
4. **TO SERVE YOU BETTER:** Students survey parents and neighbors to discover need and use for people in service trades.
5. **THE BICYCLE SHOP:** Students use role plays to experience small business occupations.
6. **JOBS IN CITY HALL:** Students take field trips and conduct interviews to investigate the career opportunities and job requirements in local governmental agencies.
7. **THREE BURGERS, NO CATSUP!** Students investigate the fast food franchise industry through research, interviewing and observations, and evaluate it in light of current course topics and as a career.
8. **THE SIX O'CLOCK NEWS:** Students study and then produce a news broadcast.
9. **MAKING SENSE OF DOLLARS AND CENTS:** Students interview and observe clerical and professional staff employed in the economic institutions in their community to explore office-related and finance occupations.
10. **COPS AND ROBBERS:** Students interview and observe people that operate the criminal justice system.

English

11. **"WHAT'S MY LINE?":** Students familiarize themselves with career concepts and particular careers by playing the television game, "What's My Line?"
12. **THE NEWS ON SEX AND RACE:** Students evaluate advertising and television programs and their relationship to ethnic, age, sex, and geographic stereotyping.
13. **JOBS IN FACT AND FICTION:** Students prepare a reading list of literature relating to an interesting career and provide a report on the contents.
14. **ACT NOW TO PLAN YOUR CAREER:** Students perform a socio-drama and the class reacts.
15. **DRAMATIC JOBS:** Students research the jobs which are done backstage for a play and tour a theater that is preparing to put on a play.
16. **HIRING FOR JOBS IN MOTION:** Students choose a transportation mode, research career opportunities in that mode, and simulate a company personnel department "hiring" applicants to work in that business.
17. **ENGLISH ON THE JOB:** Students determine how English skills are used in different occupations by interviewing people in relevant careers and writing a character sketch.
18. **TEACHING AND LIKING IT:** Students read and discuss the personality traits and tasks of a teacher.
19. **PUBLISH OR PERISH:** Students by means of a tour and interviews become aware of job opportunities in the publishing industry.
20. **JOBS, ETHICS, AND LIFESTYLES:** Students role play conflicts arising from a career lifestyle.

Mathematics

21. **TEACHING MATH:** Students discuss instructional strategies for teaching mathematics and then apply these methods to in-class and/or after-school math teaching projects.
22. **WINNING AT MATH:** Students play a team game answering math questions relevant to various occupations.
23. **SOLVING JOB PROBLEMS:** Students are given budgeting problems to solve and defend.
24. **MATH ON THE JOB:** Students survey parents and neighbors and make observations on the use of math in occupations in their community.
25. **DOW, JONES, AND EINSTEIN:** Students study various aspects of the financial world and "invest" in the stock marke with imaginary money.
26. **MATH IN THE HOME:** Students research different household management projects and apply mathematical concepts in a practical setting.
27. **CALCULATE YOUR TRIP:** Students visit a travel agency and then plan an imaginary trip and write trip-related mathematical word problems.
28. **BUYING CHARTS AND GRAPHS:** Students research and interview buyers in different industries, graph their findings, and present them to the class.
29. **DON'T FENCE ME IN!** Students listen to people whose jobs involve fence building and then do calculations related to the mathematic concepts used in barrier construction.
30. **FIGURING OUT OUR HEALTH:** Students visit health facilities to study how their statistics are recorded and then discuss how these statistics are obtained and used to improve community health.

Science

31. **JOB AID:** Students research cases in which first aid is needed and analyze the biological principles used in the first aid.
32. **TOILETS AND FUSES:** Students interview plumbers and electricians, then make designs and models of plumbing and electrical systems, and finally role play repair jobs and safety precautions.
33. **PICTURE-PERFECT JOBS:** Students research, explore and analyze the interrelationships of light, sound, electricity, chemistry and mechanics in audio-visual production by interviewing appropriate professionals in the field and constructing an experiment or display.
34. **REPAIRING ENGINES:** Students explore the mechanics and maintenance of internal combustion engines by interviewing people who repair them and then role playing common automobile engine repairs.
35. **DIGGING FOR JOBS:** Students research geological professions involving the extraction of natural resources from the earth's crust by interviewing or writing letters to persons in industries or government institutions involved in extraction of natural resources.
36. **A TREEFUL OF JOBS:** Students investigate the properties and uses of different types of wood by interviewing appropriate professionals who work with wood or wood products for their livelihood and role playing people involved in the life and uses of a tree.
37. **PREVENTING POLLUTION AND ENCOURAGING ECOLOGY:** Students examine and discuss chemical, biological, legal and social aspects of environmental pollution in their community by interviewing appropriate professionals in the field and by researching the effects of pollution in literature. Students then illustrate pollution and ecological principles by performing an ecology experiment.

38. **MINING FOR JOBS:** Students explore the relationships of geology and soil science to land-oriented industries, such as farming, mining, construction, sanitation and waste disposal by interviewing appropriate professionals in the field. Students then conduct an experiment or construct a display which demonstrates this relationship to other members of the class.
39. **WORKING IN WATER:** Students research the role and uses of water in food preparation, transportation, recreation and conservation institutions in their own and neighboring communities.
40. **UNDERSTANDING BATTERIES:** Students research how a battery works, what it does, and how to service a battery by interviewing gas station mechanics.

Other Subject Areas

41. **ART WORK:** Students analyze works of art in terms of the occupations these objects illustrate.
42. **THE ART OF TEACHING:** Students evaluate their potential for a professional or teaching career in art by interviewing artists.
43. **WORKING IN A FOREIGN LANGUAGE:** Students interview or write to multi-national companies and organizations to learn how foreign language skills are used by their employees.
44. **TRANSLATING THE PROBLEM:** Students simulate a series of encounters between foreign language speaking persons and social service agency employees.
45. **FIRST AID ON THE JOB:** Students visit industries and/or farms to research occupational injuries and first aid techniques used to treat them.
46. **NUTRITIOUS JOBS:** Students research through interviews different fields related to nutrition.
47. **GROOMING AND EXERCISING:** Students research physical fitness and grooming facilities by interviewing and observing staff at these establishments.
48. **HEALTH SUPPORTS:** Students explore medical support services in their community by interviewing appropriate professionals in the field.
49. **WORKING TO STAY IN SHAPE:** Students interview people whose careers are linked with physical education, discuss attitudes toward sports, and set up their own physical education program.
50. **SUPPORT FOR PHYSICAL FITNESS:** Students investigate careers related to the sports and recreation industries by interviewing employees in these industries.

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